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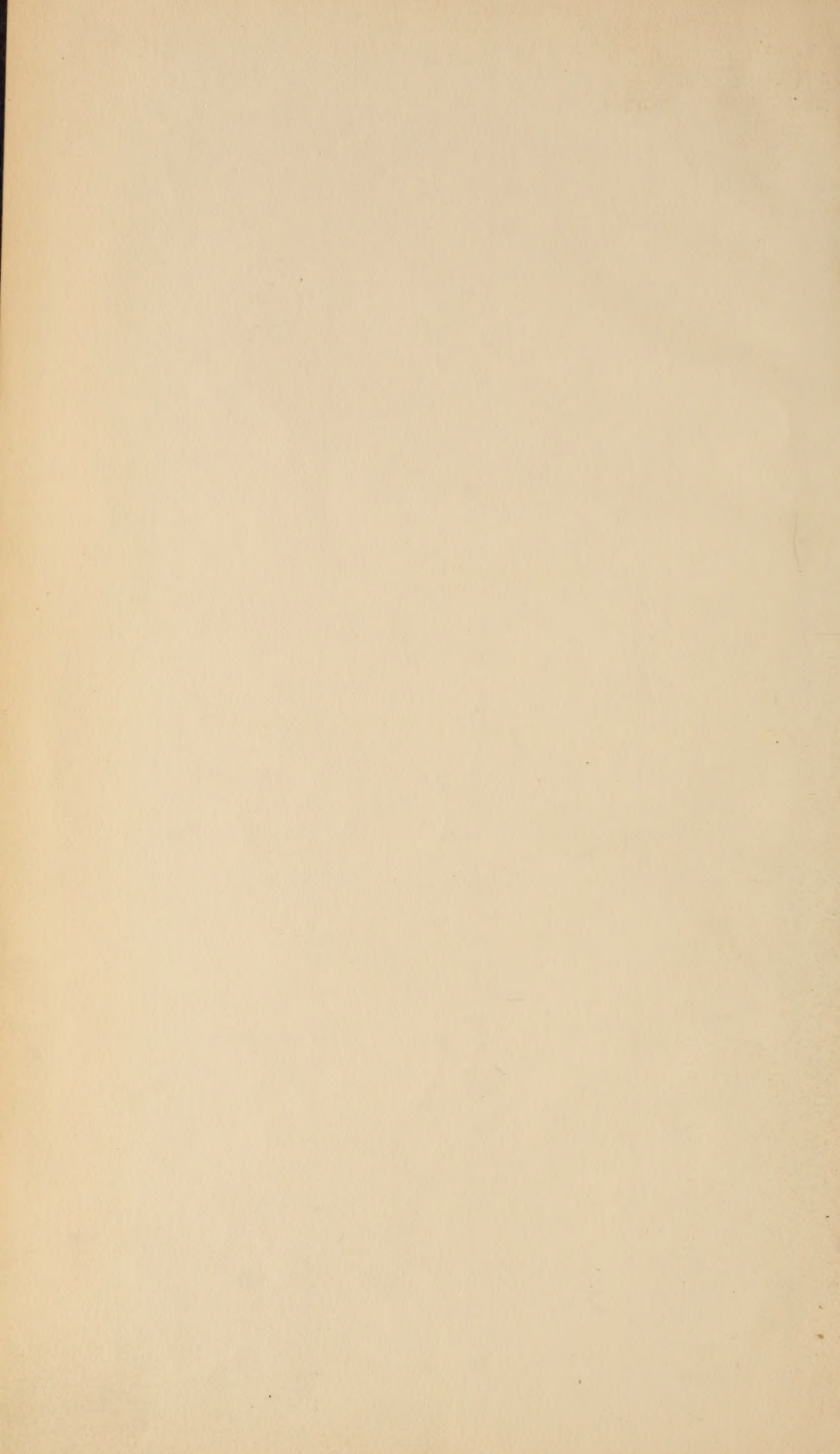
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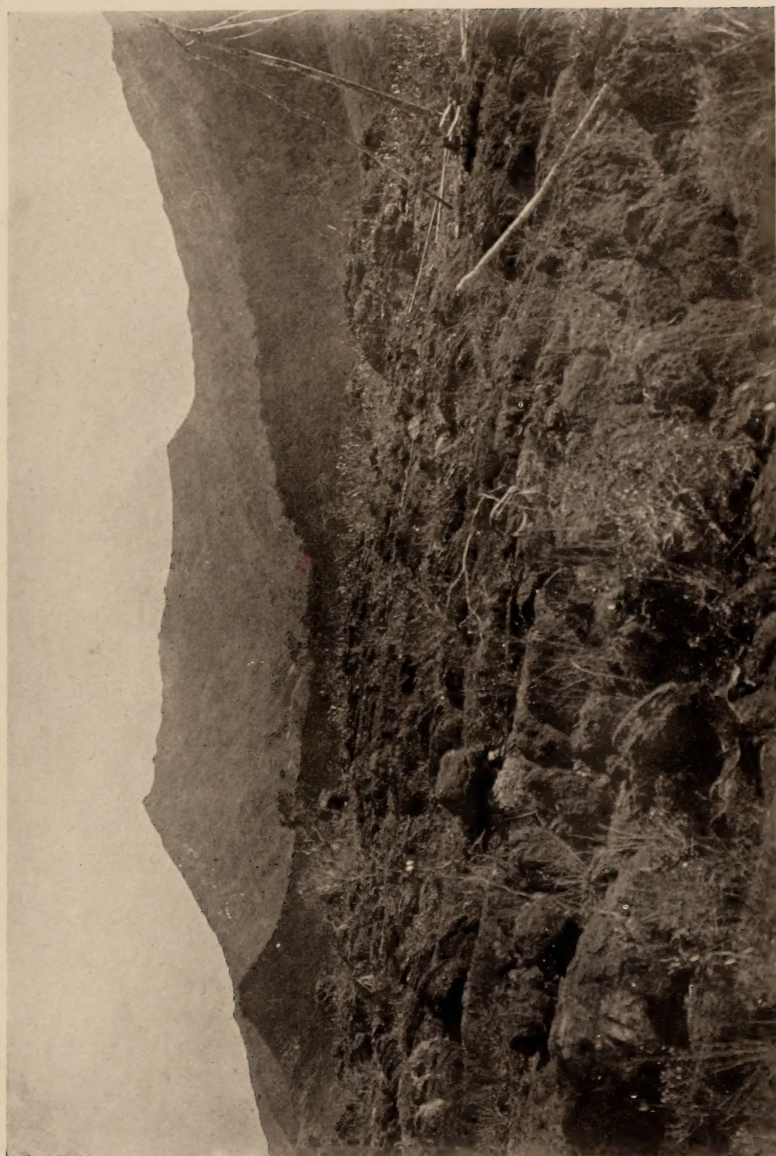
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REPORT
ON THE
GUNONG TAHAN EXPEDITION,
MAY-SEPTEMBER, 1905.



NEAR EIGHTH CAMP ON GUNONG TAHAU.

H. C. R., Phot.

PREFATORY NOTE.

SINCE the days of the veteran Russian explorer and ethnologist, Baron Mikluho-Maclay, who, in his adventurous journey across the Peninsula, viâ the Tembeling and Kelantan Rivers, was the first European to hear of Gunong Tahan, much interest has been excited by tales of an enormous mountain in the wildest part of the Peninsula between the northern districts of Pahang and the neighbouring State of Kelantan, ranging in height, according to different reports, from 10,000 to 14,000 ft.

Numerous efforts have been made in the past to reach this once mysterious mountain; but all failed, owing to a variety of reasons, the chief of which were either the inexperience of the European leaders in dealing with native transport, or else failure of supplies, owing to the great distance of the hill from any inhabited districts and the bulkiness of the rice required for Malay carriers.

The first serious attempt on the mountain was that made in 1890 by Mr. H. N. Ridley, Director of the Botanic Gardens, Singapore, with the assistance of the Straits Government. The time chosen, however just before the second Pahang war, was very unfavourable, and such information as was possessed by the local natives seems to have been deliberately withheld; while the coolies, largely natives of Kelantan, were not familiar with the local conditions and seemed to have been most inefficient in every way. The expedition was foredoomed to failure from the start and only succeeded in navigating the Tahan River for about half the total distance possible under favourable conditions.

Some years later, in August and September, 1899, Mr. Skeat—at that time a member of the Federated Malay States Civil Service and leader of an expedition which, under the auspices of the University of Cambridge, was exploring the Eastern States of the Malay Peninsula—made a flying visit to the mountain. His account is reprinted in full, with foot-notes of my own, as an addition to this report, and I need say no more than that the attempt was within an ace of success, but that—considering the time of year at which the expedition took place, the character of the equipment and the method of travel adopted—the party were remarkably lucky in escaping serious disaster.

Shortly before Mr. Skeat's ascent a Mr. Becher, who was prospecting the district, was drowned in a flood, a few miles up the Tahan River, owing to his disregarding the advice of the local Malays with regard to the selection of his camp site.

The last recorded attempt is that of Mr. Waterstradt, a Danish naturalist, in the employ of the Hon. W. Rothschild, M.P., who ascended the range from the Kelantan side and whose account is given at length in the "Journal of the Straits Asiatic Society" for 1902.

This account is not accompanied by any map, no altitudes are given, nor are there any other particulars which render it possible to trace Mr. Waterstradt's route. On the other hand, his description of the natural features of the mountain he ascended differs materially from the actual facts, so that, without in any way impugning his veracity, I cannot but think that he was never on the true Tahan range, but merely on some of the loftier outliers to the north and east.

I had long wished to ascend the mountain, but realising that any expedition on a small scale would only be a waste of money, as unless a very large number of coolies were obtainable, even if the mountain were reached, no prolonged stay would be possible, and zoological and botanical collecting, except on the most limited scale, impracticable, had deferred the attempt. In 1905, however, the Trustees of the British Museum having undertaken to bear half the estimated cost of the expedition on condition that they received half the collections, the Government of the Federated Malay States sanctioned the expedition and provided the requisite funds.

As was anticipated, the difficulties of the journey were merely those of organisation and transport, which, thanks to the trouble taken by the District Officer, Lipis, the Assistant District Officer and other Pahang officials, were readily overcome with the results shown in the succeeding pages.

Since 1905 the mountain has been ascended on several occasions and a trigonometrical beacon erected on the summit, which commands an unrivalled view of the central region of the Malay Peninsula.

The considerable delay in the publication of this report, for which my apologies are owing to the various gentlemen who have so kindly contributed to it, has been caused by the non-delivery of the plates which were overcarried by the steamship company and lost sight of for nearly a year.

HERBERT C. ROBINSON.

SELANGOR STATE MUSEUM,
Kuala Lumpur, *February, 1908.*

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ERRATA.

Page 21, line 3 from bottom, *for* 500-15,000 ft. *read* 500-1,000 ft.

- „ 27 „ 12, *for* the Nepal-Short-wing *read* the Malay-Short-wing.
„ 30 „ 5 from bottom, *for* *Eupetes macrocerus* *read* *Eupetes macrocerus*.
„ 32 „ 9, *for* Rev. Zool. *read* Nov. Zool.
„ 35 „ 2, *for* Artamdes *read* Artamides.
„ 48 „ 1, *for* malabancus *read* malabaricus.
„ 51 „ 8 from bottom, *for* Plate II., Fig. 2, *read* Plate III., Fig. 2.
„ 52 „ 29, *for* *Microhierax fringillarius* (Drags.) *read* M. f. (Drap.).
„ 53 „ 27, *for* Those females *read* These females.
„ 56 *passim*, *for* Rheinardius *read* Rheinardtius.
„ 67, line 2, *for* Kuala Lipis, 2,200 ft., *read* Kuala Lipis, 220 ft.
-

Legend to Plate A, *for* Tahau *read* Tahan.

- „ „ B, *for* Tahau River *read* Tahan River.
„ „ C, *for* Gunong Tahau *read* Gunong Tahan.
„ „ D, *for* Gunon Teku *read* Gunong Teku.

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REPORT ON THE GUNONG TAHAN EXPEDITION, MAY-SEPTEMBER, 1905.

MR. L. WRAY, Director of Museums, F.M.S., and Mr. H. C. Robinson, Curator of the Selangor State Museum, left Taiping and Kuala Lumpur, respectively, on the morning of the 11th May, 1905, and met at Kuala Kubu in the evening of the same day. The party consisted of the above named, four Dyak collectors and three Malay servants.

At 9 a.m., the following morning, Messrs. Wray and Robinson, together with all the baggage and provisions, left in a large motor lorry, the seven men having to travel in another lorry. A short stop was made at the Semangko Pass, elevation 2,700 ft., for lunch, and Raub was reached at about 5.45 p.m. While descending into Pahang, a view was obtained of a range of hills towards the north, which was thought to be Gunong Tahan, but only a passing glimpse was secured and the summit was covered with cloud. The men and baggage were sent on at 8 p.m. the same evening in six bullock carts, as the bridges do not permit heavily laden motor cars going on to Kuala Lipis.

At 7.30 a.m. of the 13th, a start was made from Raub by motor car and Kuala Lipis was reached at 10.45 a.m., the total distance from Kuala Kubu being 83 miles. The carts arrived on the morning of the 14th at about 8 o'clock, and all the baggage was stored at the British Residency.

The next day, Monday, some necessary shopping was done and the District and Assistant District Officers were seen and arrangements made with regard to paying the transport expenses, as it was not deemed advisable to take much money into the jungle. In the afternoon, a portion of the stores, in charge of two of the Dyaks, was sent down the river in a P.W.D. boat. In this boat also went a Forest Department official and a Forest Guard, who had been detailed to accompany the expedition. A letter was also sent to Panglima Kakap of Kuala Tembeling to inform him that boats and coolies would be required in two days' time.

The remainder of the party and baggage left Kuala Lipis shortly after nine on the morning of the 17th in the Resident's and District Officer's house boats, which had been kindly lent for the purpose. Kuala Tembeling was reached at 5.30 p.m. and Panglima Kakap's house, a short way up that river, at 6.45 p.m. The Dato' came on board on our arrival and talked over the arrangements.

It had been decided that the best chance of reaching the mountain was to send on an advance party of Malays with instructions to clear a track as far up as they could reach and build a camp, to serve as a

depôt, at Kuala Teku—the highest navigable point on the Tahan River—and two or three camps on the way to the summit.

Through the kind assistance of the District and Assistant District Officers of Kuala Lipis, this had been previously arranged with the Penghulu, and a party of ten Malays, under Dato' To Muntri Idin, were despatched on this errand in the latter part of April.

The Penghulu reported that they had returned, after building three camps: one at Kuala Teku and two on the hills. They had also found a flag, which had been left by Mr. Skeat, on the highest point he had succeeded in attaining on his expedition in 1899, and two of the men had advanced until there remained only two hills between them and a spur of the Tahan itself. A plan was produced, drawn by one of the men, showing the route traversed; it was a most interesting cartographic production.

Rather an alarming account was given of the nature of the hills, and the difficulties encountered in getting along the ridges beyond Skeat's flag. Several said that they were not brave enough to walk along them, and the Dato' declared that it made him so giddy that he was unable to proceed. Some of the men of the advance party accompanied the expedition.

On the morning of the 18th May the luggage from the P.W.D. boat was shifted into some small dug-outs and the two big boats, and it was sent back to Kuala Lipis. The two large and several smaller house boats and fourteen dug-outs started up the Tembeling River at 9.30 a.m. The only serious rapid, Jeram Ampai, was reached at about 11 a.m., and took about an hour to ascend. The big boats had to be pulled up with ropes, but there was plenty of water in the river so that they could be got up without grounding. It was near here that Mr. E. A. Wise was killed during the Pahang disturbances of 1894. Kuala Tekai was reached about 6.30 p.m., and the night was spent there.

Early next morning at 5.50 a.m. the journey was resumed. During the day a place was passed whence the Gunong Tahan range is said to be visible from the river; but, unfortunately, the hills were obscured by clouds. In the afternoon some small rapids were passed, without any great trouble, and Kuala Tahan was reached at 6 p.m. A camp was made on a sand-bank for the boatmen and to store the provisions, which were being carried in the dug-outs. There was a good deal of rain in the night and the Tembeling River rose about 18 inches.

On the 20th all the baggage was shifted into fourteen small dug-outs and, after a great deal of trouble with the men who were very unwilling to go, a start was made up the Tahan River at 10.40 p.m. The Penghulu and both the large boats returned down stream to Kuala Tembeling, together with the Forest Ranger, as it was found impossible to take him and his baggage in any of the boats. Subsequent events proved that it was a very good thing that he did take this course.



L. W., Phot.

PULLING BOATS UP THE RAPIDS IN THE TAHAU RIVER.

The water in the Tahan had also risen in the night, and it was coming down quite thick and dirty. On arriving at Kuala Tenok, which was reached at 2 p.m., it was found that the freshet was coming down that river, which runs for the latter part of its course through high clay banks which are constantly falling in. About half a mile above the Kuala a halt was called and a camp built for the night. Fortunately, a small tent and some water-proof sheets had been kindly lent by the Chief Surveyor, for in the valley of the Tahan there is hardly anything with which to thatch a house until the upper part of it is reached.

Up to this point the river is fairly easy to ascend, as there are no rapids ("jeram"), but only what are locally known as "chigar"—that is, gravelly rapids without rocks. Up to Kuala Teku our men asserted that they counted eighty-six rapids besides many chigars, while beyond that place, neither the Tahan nor its tributary, the Teku, is navigable.

At half-past seven on the morning of the 21st the camp was broken up. Two very bad rapids and a number of smaller ones were passed, and one of the larger boats had to be left behind, as the men said it might not stand the rough work. One of the other boats unfortunately sank, and a quantity of stores, etc., got soaked with water. The worst of it was that the supply of tea was in that boat, also the tobacco, salt fish and matches. At the bad rapids the boats had to be unloaded and the contents carried over the rocks to the smooth water above where the boats could be reladen. The boats themselves had to be pulled up with ropes and in places lifted bodily over the rocks, and it was only owing to the fact that a very large number of men could be concentrated on each boat that some of the larger ones were got up at all. A number of these portages were passed during the day, so that not much progress was made—in fact, the whole party probably did a greater distance on foot through the river than in the boats. At 3 p.m. a camp was built near Kuala Petai; the boxes in the boat that went down were opened and the contents dried over the fires, so far as it was possible to do so. Heavy rain fell during the night.

At 7 a.m. of the 22nd the 2nd Camp was left. The river was about the same as the preceding day, and there were a number of portages. One camp, containing six Malays, who said they were collecting "getah grip," was passed, but, with the exception of two or three Malay houses within half a mile of the Tembeling River, no other traces of inhabitants, either Malay or Sakai, were seen; and, except quite near the mouth of the river, there are no patches of blukar, all the jungle being primeval forest. The Malays said that there were no inhabitants, and that, with the exception of an occasional party of Malay or Dyak getah and rotan collectors, no one ever goes up the river. The numerous evidences of Sakai camps seen by Mr. Ridley's expedition were obviously only the traces of these collecting parties.

During the afternoon of this day an island in the river was pointed out * as being the scene of Mr. H. M. Becher's death in September, 1893. It appears that he and another white man were ascending the river on a prospecting expedition and coming to this island in the evening Mr. Becher decided to camp on it for the night. The local Malays who were with him entreated him not to stop there, but to go a little higher up and camp on the bank, as an island was not a safe place in a river like the Tahan. He, however, disregarded their advice and insisted on spending the night there. One boat was left, with Mr. Becher, his friend and a few Malays. The other Malays took the second boat higher up the stream and made a camp on the bank. Shortly after dinner it was noticed that the river was rising rapidly and Mr. Becher began putting his belongings into the boat into which he and the Malays jumped and cast off in the hurry, leaving the other white man on the island, clinging to the bushes; for, by this time, it was all under water. Just as the latter was giving up all hope, the second boat came down river and picked him up, and the whole party safely landed on the bank further down stream. The next morning they set out to look for the other boat and found the Malays, who said that on clearing the island Mr. Becher stood up and tried to guide the boat with a pole, although they begged him to sit down and let them do it. As a result, the boat upset and he was never seen again. A search was maintained for three days, but his body was never found. A Malay, who went part of the way with the present expedition, was the one who accompanied the party as headman. The island was quite 6 ft. above water-level and looked safe enough, except that all the bushes growing on it were bent down stream, showing that they were frequently submerged.

During the day some long stretches of deep water were passed through, and particularly in these places the banks were densely clothed with that beautiful fern *Polypodium palmatum*. At 3.30 p.m. a halt was called and a camp, the third, made for the night.

On the 23rd, at 7.15 a.m., the ascent of the river was continued until 4.30 p.m. This was a long day's work, and two of the boats, containing rice and pressing paper, did not arrive. It began raining at 5 p.m., and went on steadily nearly all night. The next morning a long portage commenced the day's journey, as the 4th Camp was just below a rapid. A boat was sent down stream to find out what had become of the two missing boats; and a report was received that, the rain coming on, the men in them had camped for the night, a short distance lower down the river.

Kuala Teku was reached at 2 p.m., and all the boats had arrived by 4 p.m. Quite a good house had been erected, just large enough to

* According to Mr. Quin, Mr. Becher's companion, who cleared a small hill above this camp, Gunong Tahan appeared to be only five or six miles away. As a matter of fact, it could not have been Gunong Tahan that was seen, but probably the range in the vicinity of the peak I have marked as Gunong Ulu Tenok.

hold all the stores, baggage, etc. This was the 5th Camp since leaving the house boats, and was reached in eight days from Kuala Lipis. By aneroid, it was shown to be 500 ft. above sea-level and 280 ft. above Kuala Tahan. The two rivers (the Teku and Tahan) are of about the same volume, and the camp was built on the high bank between them. The rain began about 6 p.m., and continued nearly all night. The Teku rose some 5 or 6 ft., and some of the boats were in danger of being washed away, had not the Malays gone out in the middle of the night and shifted them more towards the Tahan River, which was not in flood.

It is curious that none of the Malays remember anything of the Singapore expedition, consisting of Messrs. H. N. Ridley, H. J. Kelsall, W. Davison and Townson, which endeavoured to reach Gunong Tahan in June of 1891. At several places there still remain traces of the track cleared by it and of the sites of the camps. Of these, there were nine in the Tahan valley, but the highest one was apparently quite a long way below Kuala Teku. It was estimated to be ten miles from the base of the mountain, so was probably somewhere between the 3rd and 4th Camps of the present expedition. Transport difficulties and the running out of the food were the causes of the non-success of the Singapore expedition.

The question of food supply, which is a vital one in a country where none is to be obtained, was very carefully gone into before starting, and thirteen bags of rice were taken (done up in fifty small bags of 50 katis each), besides salt fish, salt and tobacco for the coolies. Tinned provisions and fowls were taken for the Europeans. Unfortunately all of the latter, which came from Selangor, died of some contagious disease, and only fifteen, obtained in Pahang, were available for food.

There were fifty-six Pahang Malays, besides the three Malay servants, four Dyaks, and the two Europeans to be fed. The rations were served out regularly every evening, so as to avoid the waste which always occurs when the men are allowed to help themselves. The allowance was a chupa (quart) of rice per man per day.

It appears that the Sultan of Pahang, at a date which could not be fixed, but before he went down river to live at Pekan, sent two expeditions to endeavour to reach the summit of Gunong Tahan, on which, according to native tradition, are to be found two pots, containing the "ibu mas" and the "ibu perak," with a gigantic brok as big as a rhinoceros standing on guard between them. The "ibu mas" is the Malay equivalent of the philosopher's stone and has the power of changing all it touches into gold. Both these parties endeavoured to reach the mountain via the Teku valley and both failed, owing to the steep and rugged nature of the country, which once any considerable altitude is reached consisted of a series of terraces separated from each other by precipices, some of very considerable height and intersected by narrow ravines with almost perpendicular sides. It was this route,

also, which was selected for the projected expedition of Mr. H. Clifford and Sir F. A. Swettenham, a track having been cut for some miles in that direction, prior to the scheme being abandoned. Mr. Skeat, according to our native informants, also followed the Teku route; but, finding it impracticable, cut across the valley to the Tahan watershed, reaching a point subsequently utilised as our 7th Camp, beyond which he was unable to advance, owing to failure of provisions and the exhaustion of his men.

From Kuala Teku onwards the route taken was up a spur forming the watershed of the Tahan on the right and the Teku on the left, this watershed being followed until the main *massif* of Gunong Tahan was reached, after which the Teku valley was followed.

After Kuala Tenok is passed, the Tahan valley is narrow and rugged, the river in many places running through a deep gorge with steep rocky sides. To attempt to go up the valley by land would be a very difficult matter, as at these places it might be necessary to cut a track four or five hundred feet above the valley level to escape the precipitous sides of the ravine. The only practical way is to follow the river in small dug-out canoes with rather high sides. The river is clear of timber, owing to the trees, which periodically fall into it, being swept away by the heavy freshets which are characteristic of this valley.

The rocks met with were all sedimentary. There are a large series of green, blue-purple and red slates, as well as sandstones and conglomerates. Neither organic remains nor economic minerals were noticed.

Beyond rotans and rubber obtained from some of the climbers belonging to the genus *Willughbeia* and other nearly allied plants, there does not appear to be anything of commercial importance in the Tahan valley. No gutta-percha-yielding trees were noticed, and the Malays stated that there were none in the valley. Timber trees, doubtless, are plentiful; but it would probably be hardly feasible to get the logs down a river of so rocky a nature.

On the 25th all the rice, which had got rather wet during the journey up the river, was put out in the sun to dry, on stages erected for the purpose. The men, not employed on this work, were set to making baskets to carry things up the hill in, as these Pahang men can only carry on the back. As the baskets were made, they were lined with the leaves of the daun sang palm (*Teymannia altifrons*), and the boxes of stores were opened and the contents packed into them ready for the next morning. Up to this point the coolies had worked very well, but now they began to give trouble, and a number of them said they were going to return, having gone as far as the river was navigable. After much talking, they set to work on the baskets.

On the 26th thirty-nine coolies and two Dyaks went off before 7 a.m., with loads of stores, etc., to the next or 6th Camp. Mr. Robinson



GUNONG TAHAU FROM SIXTH CAMP.

L. W., Phot.

went part of the way with them. The first man to return came back at 11.20 a.m., and all had returned by 4 p.m. In the meantime the process of repacking the boxes and sunning the bags of rice was carried on.

The next day more stores, principally rice, were sent up. Twelve men said they were sick and refused to go. There was no doubt that nearly all of them were malingering, so a draft composed of half an ounce of Epsom salts and five grains of quinine was served out to them with most salutary results.

On the 28th the coolies began going up with the rest of the baggage at 7.30 a.m., and Messrs. Wray and Robinson left the camp at 9.30 a.m. There was very great trouble with the coolies, as none of them wanted to go on to the 6th Camp. It rained heavily on the way up and camp was not reached until 2.30 p.m. It rained again in the evening and night; and there was also a very high wind, which brought out the defects of the hut, and had there not been some water-proof sheets, the want of walls would have been much more felt than it was. It was reported that both the Tahan and the Teku rose very high in consequence of the rain and swept down stream a large tree that had been felled two days previously.

The camp was situated on a narrow spur, only about 12 ft. wide at an elevation of 3,500 ft. above sea-level.

The next day all hands were put on to collecting wood and palm leaves, enlarging the hut and walling it in, and generally making it more or less watertight. It was reported that thirteen of the coolies had run away the previous evening and gone off down the river in the morning, taking several boats and some of the rice, which had been left at Kuala Teku for the use of the returning coolies.

On the 30th Mr. Robinson went up to the 7th Camp, with twenty-four men, taking a quantity of rice, stores, etc. This camp, which was on a ridge just overlooking the lower camp, is 4,580 ft. above sea-level, and was built near the remains of two huts said to have been made by Mr. Skeat in his attempt to ascend Gunong Tahan in 1899. Near the huts was a flag, hung on a pole, tied to a tree, marking the highest point attained by the above-named gentleman.

The remainder of the men were set to work erecting drying stages for sunning the botanical specimens, building a lanti pathway outside the house, as it took up all the width of the ridge, and felling a number of trees to let the sun in and also to allow of a good view of the hills being obtained from the camp.

On returning from the camp, all the coolies said they wanted to go, and refused to proceed another stage towards the main range as requested. The next day, the 31st, as there was no method of compelling them to remain, they all left, taking some letters to be forwarded to Kuala Lipis. Only four Pahang men remained: they had been engaged to stay on the hill and continue the track up towards the summit.

On the 1st June these men worked on the house, making doors and windows, and the next day they were sent up to "Skeat's Camp," with instructions to improve the track along the ridge leading to the main range.

On the 2nd June Messrs. Wray and Robinson left camp at 8.30 a.m. and reached Skeat's Camp at 10.30 a.m. They then went on to a peak upon the same ridge, which was named "Observation Hill," and along its continuation to the last point reached by the advance party. In places this ridge was very narrow with precipices on either hand, and there were a good many points where ladders had had to be put in to get up the rocks by.

Beyond the point reached, there appeared to be two hills to cross before getting on to the main range. Rain coming on, it was determined to return, and the 6th Camp was reached at 4 p.m.

On the 4th three of the Malays came down for more rice and water, and on the 6th Mr. Robinson went on to Skeat's Camp, taking two Dyaks and one Malay boy with the intention of proceeding along the track and selecting a good site for the 8th Camp.

Two of the Pahang Malays came down on the 7th and reported that they had cleared the track to the main range and had put in a flag at the highest point reached by them. With a glass, this could be made out just above a tall white cliff, on the spur of the main range nearest to Observation Hill. They further reported that there was a good supply of water before reaching the hill and also higher up. This was good news, as so far water had been the great difficulty. At the 6th Camp it was bad and a long way down the hill, and at Skeat's Camp there was only a small soak of brown, muddy water.

Mr. Robinson came down at 12.40 p.m. on the 8th, having left the site of the 8th Camp at 8.30 a.m.; and on the 9th the four Pahang Malays went up with provisions to last them five or six days and instructions to build a hut on the site selected by Mr. Robinson.

Two of them returned on the 14th and reported that they had made a camp but not a good one, as there was practically nothing to make a roof or walls of but brushwood, and all the wood was small, twisted and wind blown. They also said they had reached the "gedong" and put a flag on it, having taken only one hour walking to it from the flag on the ridge above the 8th Camp.

Mr. Robinson, three Dyaks and two Malay "boys" went up to Skeat's Camp on the 16th, and thence on to the 8th Camp for a stay of some days' duration. Mr. Wray was unable to go, as he was suffering from an attack of dysentery, which began on the 13th June. One Dyak and a Malay "boy" stayed at the 6th Camp with him.

On the 20th June, eleven Malay coolies arrived at the 6th Camp, bringing the first letters and news that had been received since leaving Kuala Lipis. The next day these men were sent up to the 8th Camp with rice and palm leaves for making huts. They were then employed taking up the remainder of the stores, etc.



GUNON TEKU FROM SIXTH CAMP.

L. W., Phot.

It was decided that, as Mr. Wray was still ill, it would be best for him to go back with the returning men, as in his then state of health he could not hope to proceed to the higher camps, even if all went well, for several weeks. Consequently he was carried down the hill on the 25th, leaving at 8.20 a.m. and reaching Kuala Teku at 4 p.m.

One of the coolies was taken ill in the night, with what appeared to be pleurisy, doubtless due to a chill caught while at the upper camp. The next morning Mr. Wray, one Malay servant and seven other Malays, including two sick men, left in a dug-out canoe. This had been badly damaged and gave a great deal of trouble, one man having to be kept at work all the time baling it out. Fortunately there was a good-sized *kuali* available, otherwise it would have been a difficult matter to keep the canoe afloat. On the evening of the fourth day Kuala Tenok was reached and Kuala Tembeling on the evening of the 29th. Here a new boat was procured, with a kajang cover to the after part of it and a fresh crew. A start was made up the Jelai at 8 a.m. the next day (the 30th), Kuala Lipis being reached at 3 p.m. on the 1st July, so that the return journey from the 6th Camp was accomplished in seven days.

After the departure of Mr. Wray, the party consisted of six Pahang Malays, all more or less picked men, the four Dyaks and two Malacca Malays, who were all well aware that it would be impossible for them to desert with any safety to themselves, as only one small dug-out remained, which could not accommodate more than three men; while the difficulties of the land route were such that sufficient food could not be carried to last until inhabited districts were reached. Thereafter everyone of the natives made the best of what was doubtless to them a very bad job, and, after a day's holiday, which was devoted to a very successful fishing party, we all started up the hill again on the morning of the 27th June. Turning a sharp corner in the track close to the 6th Camp, I found myself within a few feet of a fine black leopard, which, after leisurely surveying me, made off down the hill and was seen no more. With the exception of a bear met with by one of the Dyaks, this was the only beast in the nature of big game that was actually seen by any of our party while on the hill. By the afternoon of the 29th the whole of the expedition was concentrated at the 8th Camp with stores sufficient to last with care for about six weeks.

From the 29th June to the 14th July I was occupied in collecting work, in making a rough survey of the Tahan valley and in ascertaining what was the easiest route to the summit which was distant only a little over two miles in a direct line. The Pahang Malays were employed in making another camp further up the Teku River, where it was joined by another stream. This was rather a lengthy job, as I did not wish to dismantle the existing camp and the only available building materials—the large fan-shaped leaves of a species of palm—were distant about three hours' walk from the proposed site. On the 15th July, leaving two men to look after the 8th Camp, we moved on

to the new one, the last mile or so of the route being along the bed of the river and very rough going for laden men.

On the 16th July I started off with four Malays to cut a track to the summit. There was a good rocky ridge nearly all the way with only one insignificant descent. We reached the top about 10.15 a.m., but, as there was a strong wind with thick mist and it was bitterly cold, we returned to camp as no view could be obtained. Singularly little life was noticed on the ascent, only two species of birds (*Suya waterstradti* and *Mesia argentauris*) being seen, a lizard (*Calotes microlepis*) new to the fauna of the Malay Peninsula and some large humble bees and Asilid flies.

On the 17th July a brief but very heavy rainstorm in the middle of the night caused the river to rise over 20 ft. and nearly wash away one of the huts, which was thought to have been built far above flood level.

On the 18th July we again ascended the mountain and built a small cairn at the top. There was a strong wind blowing when we arrived at the summit, which we made out to be approximately 7,200 ft. above the sea, and the temperature was 52° F.; but later on the mist cleared and the sun came out and at 12.30 p.m. the thermometer rose to 63° F.

A magnificent view was obtained of the whole of the main range of the Peninsula from the high mountains, north of Temongoh and the Ulu Plus, to where it sinks to low hills at the watershed of the Triang. Gunong Kerbau, a little north of west, was very conspicuous, but I was unable to pick up any of the trigonometrical beacons, either with the theodolite or a fairly powerful telescope. Close to us on the Kelantan side was a big conical mountain, which I estimated as 5,000 ft. high, which was probably Gunong Sinting, and in the middle distance to the north and south-east were ranges of low limestone hills, amongst which could be recognised Gunong Sinyum on the Pahang River.

On the 19th July we walked up one branch of the Teku to its source having to negotiate one or two rather nasty cliffs on the way. We found that the watershed, which is presumably on the Kelantan frontier, was about 5,400 ft. above sea-level. The valley on the opposite side was said to be that of the Relau, though certain hill sketches made by Mr. Scrivenor render this somewhat doubtful and suggest that the whole of the Tahan drainage ultimately reaches the Pahang River, and that the small stream that I was informed was the Relau, a tributary of the Kelantan River, is really the head-waters of the Tanum, which flows into the Pahang north of Kuala Lipis.

The objects of the expedition had now been achieved, and no species new to our collection having been obtained for some days past, I decided to return to Kuala Teku, which was reached on the evening of the 25th July without incident. We stopped at Kuala Teku until the 7th August, when, as provisions for myself were almost exhausted and the remaining rice was mouldy and unwholesome, I decided to go

down stream and send up additional provisions and boats to bring down the men and collections. Accordingly I started about 5.45 with two Pahang Malays and my boy in our one remaining boat, which was now very leaky and almost past service. We got badly swamped at the first rapid and had to swim for it and dive for our belongings, but after that we got on fairly well and reached Kuala Tenok at about 6.45 p.m. and camped there for the night. On the way we passed two of the camps made by Mr. Wray's party on their descent, and saw several pairs of the smaller Malay Fishing Eagle (*Poliactes humilis*) and two large Otters.

As soon as we got into camp it began to rain hard and continued until dawn, so that we passed a very cheerless night, which was not rendered more comfortable by the presence of a tiger in the immediate vicinity, which, as the tracks showed next morning, had been regaling itself on the fallen fruit of a wild mango (*bachang*).

Next morning we had a rather exciting journey to Kuala Tahan, as the river was in heavy flood. We reached the Tembeling about 8 a.m., and there met Panglima Kakap organising the "relief expedition." After arranging with him to send up twelve men in six boats and a sufficiency of food, I changed into a rather larger boat and went on down the Tembeling, stopping the night at Kampong Pasir Atas near Kuala Atoh.

On the 9th August we got off early and, after stopping a few minutes at Kuala Tembeling, went on up the Jelai, stopping for the night at Pulau Duk Duk and reaching Kuala Lipis about noon on the 10th August.

After a few days' stay in Kuala Lipis, I returned to Kuala Tembeling, where the remainder of the party was met. A fortnight was spent in making lowland collections and in obtaining anthropometrical measurements of the local Malays, after which the whole party returned to Kuala Lumpur, arriving there on the 6th September, after an absence of nearly four months.

PHYSICAL FEATURES.

The southern side of the Tahan range, which was the only one we examined, consists of two long ridges running approximately N.N.-E. and N.N.-W., connected to the north by a central boss on which the highest summit is situated.

This face of the mountain is drained by two fairly large streams—the Teku and the Tahan—which rise within a few yards of each other on opposite sides of the main ridge and describing a wide sweep to the west and east ultimately unite at Kuala Teku to form what is afterwards known as the Tahan River. The route by which we ascended the mountain was for the greater portion of its length on the watershed of these two streams, until we reach the base of the central mountain, shown in plate C, when we ascended the shoulder on the extreme left and then descended into the Teku valley. Until the 6th

Camp the ascent is a fairly uniform grade, not particularly steep and the mountain is apparently composed of shales and schists. From the 6th Camp, however, a very steep ascent of about 1,400 ft. brings one to the crest of a razor-backed ridge of sandstone and quartzite leading to the base of the central mountain. On either side of this ridge, which in places is not more than five or six feet wide, there is a precipitous fall on the west to the Teku and on the east to the Tahan valley, a magnificent view of almost the whole course of the former river and the mountains on its opposite bank being visible under favourable conditions. After several undulations, this ridge, trending in a northerly direction, leads to the base of the cliffs of the central mountain, after which a climb of about 600 ft. from ledge to ledge brings one to the main arrête, from which there is a descent of about 800 ft. into the Teku valley. Below this point the valley is suddenly broken off, so that in a horizontal distance, which cannot much exceed a quarter of a mile, the river descends about 2,000 ft. in a series of magnificent waterfalls.

The upper valley of the Teku, which is thus cut off from the lower valley, merits a more detailed description. To the west it is bounded by the range of mountains which separate the Tahan River system from the Kechau, and which appear to attain a maximum elevation of about 6,000 ft. The eastern side is formed by the northern face of the mountain depicted in plate C, and which is universally considered to be Gunong Tahan by Pahang natives. The northern end is closed in by the ultimate summit of the range separated by deep valleys from the eastern and western ranges. This mountain is that known in Kelantan as Gunong Siam. The whole length of the valley is about five miles, while from crest to crest it is about two miles wide with an average elevation of about 5,200 ft. It is abundantly watered by streams which have cut deep clefts through the hard sandstone. Vegetation, except in the vicinity of these streams, is very scanty and principally consists of coarse grass and sedges intermixed with small shrubs. The most curious feature of the valleys is the occurrence along both sides and at various levels of flat plateaux, varying in area from a few square roods to thirty or forty acres. In immediate vicinity to one of these our 8th Camp was situated, and plate A, which is reproduced from a photograph taken on the edge of the plateau, gives a very good idea of the general appearance. From what could be seen of the hills above the lower Teku valley, similar but even larger plains exist there, and if ever the Teku uplands are reasonably accessible by road, they would afford for six months in the year an almost ideal health station, though at present there seems no prospect of their ever being accessible, except by the somewhat arduous route up the Tahan River.

At the foot of the conical peak to the right of plate A, the Teku River again bifurcates, and it was here that we pitched our final camp. One branch runs about north-east and was followed to its source on the ridge between the Teku-Kechau range and the central *massif* of

Gunong Tahan, which is probably the watershed between Kelantan and Pahang, the stream rising on the other side of the divide being stated to be the Relau, a tributary of the Kelantan. The other branch winds along under the base of Gunong Tahan and takes its rise in the pass between that mountain and the one called Gunong Tahan by the Pahang Malays, and which is the one visible from the 6th Camp and depicted in plate C.

The climb from the Kuala is very steep until the top of the ridge is reached, after which the top is almost flat for about a mile, so much so that it was difficult to find the actual summit. The ridge was broad and sloped away fairly gently on the north, but was very precipitous on the side facing the Teku. Vegetation was similar to that in the valley, with the exception of the large-leaved rhododendrons which were not noticed elsewhere.

ZOOLOGY.

MAMMALS.—It will be seen from Mr. Bonhote's report that 27 species were obtained in the course of the expedition, but of these nine were secured either at Kuala Tembeling or at Kuala Lipis, leaving only eighteen from Gunong Tahan itself. Of the two species described as new, one *Sciurus tahan* has since been found to be widely distributed on the loftier mountains of the Peninsula; while the other *Coelops robinsoni* as a small and inconspicuous bat that might readily be overlooked anywhere.

Siamangs, gibbons and leaf monkeys were very common on the lower slopes of Gunong Tahan, but ceased abruptly at about 3,000 ft., and none were either seen or heard above that height. At the foot of the mountain, near Kuala Teku, fairly fresh tracks of elephant, rhinoceros and tapir were noted, and during our stay at the higher camps, a large herd of the former had evidently spent some time in the vicinity, though luckily they had not interfered with our house. Elephant tracks and dung were noted at over 5,000 ft. on the pass leading from the head-waters of the Tahan into Kelantan.

One of the most curious points in connection with the fauna was the utter absence of pig and deer—either sambhur, barking deer or mouse deer. The absence of sambhur (*rusa*) was not perhaps very extraordinary, as this species frequents, as a rule, forest in the vicinity of clearings and kampong land, but I certainly expected to meet with barking deer (*kijang*); and the absence of mouse deer (*pelandok* and *napu*), which are usually abundant everywhere, is quite inexplicable. The non-occurrence of pigs, which are very abundant on the Selangor main range up to about 5,000 ft., was perhaps due to the relative scarcity of tuberous plants on which these animals mainly feed. The *kambing gurun* (*Nemorhaedus swettenhami*) was heard, and its dung seen high up on Gunong Tahan at about 6,500 ft., and also in the valley at slightly over 5,000 ft., but it appeared to be rare.

Of the larger carnivora, members of the party met with bears and black leopards, but no tigers were seen or heard, possibly, because there was nothing for them to live on; at the mouth of the Tahan and also at Kuala Tembeling they were very numerous.

BIRDS.—Up to about 3,000 ft. birds were very scarce in individuals, though numerous in species; while above that limit the contrary was the case and probably over 90 per cent. of the individuals seen belonged to four or five species.

Of the 175 species of which specimens were collected Mr. Ogilvie-Grant has described seven species as new, but I do not think that any of them will ultimately prove to be peculiar to Gunong Tahan.

Only two species, *Gecinus robinsoni* and *Zosterops tahanensis*, have not been procured within the last year or so on the mountains of the Selangor main range, distant as the crow flies about seventy or eighty miles from Gunong Tahan. Of the novelties collected by Mr. Waterstradt, only one *Suya waterstradti* has not been procured elsewhere, and, in my opinion, this is the only species at all likely to be confined to Gunong Tahan. Very few birds were seen but not procured on mount Tahan. A swiftlet (*Collocalia*) was very abundant on one or two occasions, and I once noted what I thought was a crag martin. A few large eagles were seen, but, as is almost invariably the case in large jungle, it was impossible to obtain them, though one pair of a species of *Spizaetus* came within range. The other species noted was *Neopus malayensis* and possibly *Lophotriorchus kieneri*. Argus pheasants and wood quail (*Rollulus roulroul*) were very abundant on the lower slopes and formed a welcome change of menu, as they were very easily trapped. The larger hornbills were scarce, and the imperial pigeon, usually so abundant on the high mountains throughout the Peninsula, was not met with once.

REPTILIA.—Reptiles of all orders were very scarce on the mountain, all the lizards being quite rare; while the only snake that could be called common was *Psammodynastes pulverulentus*, which, as noted elsewhere (*post p.* 69), was much dreaded by the natives. No species of tortoise was seen, though we were all on the look-out for them, as I was specially anxious to obtain additional specimens of the hill tortoise (*Testudo pseudemys*), described from specimens obtained some years ago in the Batang Padang mountains, South Perak.

The occurrence of *Calotes microlepis*, so far down the Peninsula, is interesting as showing an affinity between the fauna of Gunong Tahan and the Tenasserim hill ranges, which is borne out by the *Gecinus*, a species allied to *G. occipitalis*, which also occurs in Tenasserim. The waters of the Tahan and Upper Tembeling are too rapid for crocodiles and no species, not even the gavial, occurs in them. Even in the Pahang River, though there are many deep and still pools suitable for them, they are decidedly rare. Upstream, from Kuala Semantan, human beings are practically never attacked by them, and, though I made careful enquiry at Kuala Tembeling, I never heard of a case.

BATRACHIA AND FISHES.—There is nothing special to note with regard to these groups. The latter were hardly collected, as we had no dynamite with us, and the few specimens we captured by other means were in too great request as food to be consigned to the spirit jar.

INVERTEBRATES. Time did not permit of our devoting our attention to collecting the invertebrata, for which, at any rate during the time of our visit, Gunong Tahan proved a singularly poor ground. Butterflies were fairly numerous at Kuala Teku, but were only the common varieties, chiefly Pieridæ, to be met with everywhere in the Malay Peninsula. At our 6th Camp (alt. 3,300 ft.) *Longicorns* were fairly numerous, both in species and individuals. A considerable number were collected, which will doubtless be reported on in due course. Higher up insect life was very scarce, and in the central valley practically the only butterflies noted were species of *Delias* and *Danaïs*, which were rare, and a *Mycalesis* which was very common. Wasps (*Vespa ducalis*) and humble bees (*Bombus* sp.) were fairly common at high altitudes, and so was a large bluish-black click beetle (*Elaterid*). Mosquitoes were very scarce and so luckily were the large blowflies, which, on many mountains in the Peninsula, render life a burden by depositing their eggs in clothes and food. Very few centipedes, millipedes or scorpions were noted, though one or two very large specimens of the former group were found under stones at the summit.

BOTANY.

Contrary to expectation the general Flora of the Tahan region was by no means rich, and in particular the comparative scarcity of epiphytic plants, which on the main range of the Peninsula are exceedingly abundant, was very marked. This is probably due to the fact that Gunong Tahan is situated at a very considerable distance from the sea, and that, during a portion of the year at least, possesses a much drier climate than most other mountains approaching it in height. The soil, too, being entirely derived from the denudation of sandstones and quartzites, is largely deficient in the mineral elements necessary for vigorous plant growth; while the steepness of the slopes, and the heavy rainfall during the wet monsoon, prevents very great accumulation of vegetable humus. Only in one place, beneath the escarpment of Gunong Tahan itself, did I notice anything to equal the luxuriant vegetation prevalent at similar heights in Selangor and Perak. Begonias, in particular, were especially scarce, and the growth of moss on trees and ground, even in the shadiest and dampest situations, was nowhere especially marked.

From Kuala Teku onwards to about 2,500 ft. the jungle was of ordinary submontane character of a somewhat open type, the most characteristic feature being the existence in large numbers of the rare and local palm *Teysmannia altifrons*, which was a perfect godsend to us for hut-building purposes, as the bertam palm *Eugeissona tristis*, in general use for such purposes, was hardly to be found.

Above 2,000 ft. a small-stemmed palm known to the Malays as *pallas*, and which makes valuable walking-sticks, began to be abundant, but died out again as the altitude increased. At Kuala Teku itself two species of bamboo were fairly common—one of the ordinary variety about three or four inches in diameter; while the other, which I have not seen elsewhere than in the Tahan valley, was about an inch and a quarter in cross section and almost solid. Above 1,500 ft. bamboos rapidly thinned out, and at the 6th Camp they were rare and quite sporadic as were also the ordinary rotans, though one or two dwarf creeping kinds were not uncommon. About 2,000 ft., as we were nearing the summit of the ridge, the true mountain vegetation began to appear. Among the larger forest trees the large-coned *Dammara* attained its maximum size, while one or possibly two species of *Dacridium* were not uncommon. The crimson *Rhododendron malayanum* became abundant whilst on slopes, where fallen trees or landslips had opened up the ground thickets of bracken-like ferns intermixed with pitcher plants grew luxuriantly.

After 3,000 ft. large trees quite died out; while shrubs allied to *Vaccinium*, a large species of *Pandanus* and bushy forms of *Dacridium* and *Podocarpus* took their place. Pitcher plants became very much more abundant and continued right to the summit of the mountain, while rotans and bamboos almost died out. On some of the steep and rocky slopes a tall palm with fan-shaped leaves, which is seen in the foreground of plate D, was very numerous and, in default of better material, was used for building shelters. As has been noted previously, no exceptionally luxuriant vegetation occurs anywhere on Gunong Tahan, except in the gullies on the actual escarpment of the mountain, where the moss was very thick. Here were noted a handsome *Rhododendron*, with scarlet flowers, allied to *R. jackianum* and a fine *Dendrobium*, with deep magenta flowers. Two or three species of *Burmanniaceae* were also not uncommon. After crossing the escarpment and the shoulder of the mountain and descending again into the broad valley of the Teku, which has been described in the section on Physical Features, the vegetation again changed somewhat in damper situations, coarse sedges and grasses and a species of sundew were the dominant forms. On the rocks pitcher plants with small white pitchers and an orchid with small ovate pseudo-bulbs of a bright yellow colour were very numerous; while in the lateral valleys wherever the soil was a little thicker two handsome ground orchids were much in evidence, one with flowers of a bright buttercup yellow (*Spathoglottis wrayi*), and the other of varied shades of mauve and magenta (*Arundina bambusaeifolia* var.). This flora continued practically unchanged to the actual summit, but on the final ridge the hillocks were covered with a somewhat denser vegetation, chiefly composed of *Pandanus* and large-leaved species of *Rhododendron*, which were not in flower at the time of our visit, but are identical with a species found on the Selangor main range at altitudes above 4,500 ft.

Unfortunately, after Mr. Wray's departure, much time could not be devoted to Botany, but in all about 200 species of plants were collected, of which it is hoped to publish a list in a subsequent number of this Journal.*

* Since this report was in type, I have heard that Mr. Ridley has worked out our botanical collection. His report will shortly appear in the "Journal of the Linnæan Society."

I.

M A M M A L S .

BY

J. LEWIS BONHOTE, M.A., F.L.S.

I.

REPORT ON THE MAMMALS.

By J. LEWIS BONHOTE, M.A., F.L.S.

FIELD NOTES.

By H. C. ROBINSON.

(WITH ONE PLATE.)

THE following is an Account of the small Collection of Mammals, made on Gunong Tahan by Messrs. L. Wray and H. C. Robinson. Considering the many collections that have been made in the Malay Peninsula of recent years, it is not to be expected that a large proportion of novelties should occur; but, of the 28 species in the present collection, three are new, while one, *Mus inas*, was only described a few months ago. A bat of the genus *Caelops* is described, a squirrel allied to *Sc. tenuis* and a local race of *F. rufigenis*. Besides these actually undescribed species, there are several species of, perhaps, still greater interest as adding further to our knowledge of the fauna; and among these should be noted especially the fine series of *Sc. c. griseopectus*, a further example of *Mus ciliatus* and a single specimen of *Gymnura*, an animal that seldom finds its way into collections.

I have given as little synonymy as possible: Capt. Flower's paper in the Proc. Zool. Soc. for 1900 is quoted, after the first reference, as "Flower, op. cit."; and in the same way my paper in the "Fasciculi Malayenses (1903)" is quoted as "Bonh., op. cit." In these two papers will be found all former references relating to the various species in the Peninsula and reference is made to all papers subsequent to 1903. Blanford's Fauna of British India Mammals, quoted as "Blanf. Mamm.," has been referred to, although it does not deal with the Malay Peninsula, because it is likely to be within reach of collectors on the spot and gives valuable information as regards habits as well as detailed descriptions.

1. HYLOBATES SYNDACTYLUS (DESM.).

Pithecus syndactylus, *Desm., Mamm.*, p. 531 (1820).

Hylobates syndactylus (Desm.); *Flower, P.Z.S.*, 1900, p. 313.

a. m.ad. Gunong Tahan, Pahang. 3,000 ft. 16th June, 1905.

This specimen is a very fine adult male. The dimensions noted are: Stretch of arms, 5 ft. 7 in.; heel to body, 1 ft. 5 in.; hind-foot, $7\frac{1}{2}$ in.; hand, $6\frac{1}{2}$ in.; body girth, 1 ft. $10\frac{1}{2}$ in.; ear, $1\frac{1}{2}$ in.; eyes, reddish-brown; skins of hands, feet, face and pouch, black.

2. HYLOBATES LAR (LINN.).

Homo lar, *Linn. Mantissa*, App. p. 521 (1771).

Hylobates lar (Linn.); *Blanf. Mamm.*, p. 7; *Flower, op. cit.*, p. 312.

a. f.ad. Kuala Teku, Tahan River, Pahang. 500 ft. 7th August, 1905.

b. m.juv. (son of above).

The adult specimen is of a uniform pale brownish-yellow, having the white ring round the face extremely clear and well marked. The young is of a uniform dark brown, with pale rump, breast, vent, hands and feet, the lighter colour extending for some way up the inside of the arms. The ring round the face is white, this colour extending back on the neck and cheeks to a little behind the ear.

[Both this species, the *wa-wa* or *ungka puteh*, and the preceding, the *siamang*, were common on the lower slopes of Gunong Tahan, extending up to a height of about 3,000 ft. They were, however, extremely wary and, owing to the steep slopes and broken nature of the country, very difficult to approach. Their cries were constantly heard in the early morning and were readily distinguishable, that of the *siamang* being much more sonorous and staccato.—H. C. R.]

3. PRESBYTES OBSCURUS (REID).

Semnopithecus obscurus, *Reid, P.Z.S.*, 1837, p. 14; *Blanf. Mamm.*, p. 41; *Flower, op. cit.*, p. 317.

Presbytes obscurus (Reid); *Bonh., Fascic. Malay Zool.*, i., p. 5 (1903).

a. f.ad. Kuala Teku, Tahan River, Pahang. 500 ft. 7th August, 1905.

b. juv. (young of above).

c. „ Kuala Teku, Tahan River, Pahang. 500 ft. 31st July, 1905.

d. m.ad. Kuala Tembeling, Pahang River. 200 ft. 25th August, 1905.

The young are of a uniform pale orange colour throughout, the tip of the tail being slightly darker. In the older of the two the hands are dark brown as in the adult and the fulvous hairs are thickly interspersed with dark brown ones as far up as the elbows; there are also a few dark hairs over the face.

[On Gunong Tahan the *lotong* was found in troops of seven or eight to an altitude of about 2,000 ft. and was decidedly shy. At Kuala Tembeling, on the other hand, in the vicinity of Malay villages, it was remarkably tame and could be approached without difficulty.—H. C. R.]

4. PRESBYTES FEMORALIS (MARTIN).

Semnopithecus femoralis, *Martin, Charlesworth's Mag. Nat. Hist.*, ii., p. 436 (1838); *Flower, op. cit.*, p. 318.

Presbytes femoralis (Martin); *Bonh., op. cit.*, p. 7.

a. m.ad. Kuala Tembeling, Pahang River. 200 ft. 25th August, 1905.

b. f. „ „ „ „ 20th August, 1905.

These two individuals are very similar, but the female is rather darker in colour, while the male is much greyer and approaches the so-called "*albocinereus*" type.

[The *kaka* is very similar in habits to the preceding species. The more typical *P. femoralis*, with the white on the inside of the thighs very sharply defined, seems to be mainly a low-country form, while the paler variety is more common in the hills up to about 3,000 ft.—H. C. R.]

5. *MUSTELA FLAVIGULA PENINSULARIS*, BONH.

Mustela flavigula peninsularis, Bonh., *Ann. Mag. Nat. Hist.*, vii., vol. 7, p. 346 (1901).

Mustela flavigula (Bodl.) ; *Blanf. Mamm.*, p. 158 ; *Flower, op. cit.*, p. 333.

a. m.ad. Kuala Teku, Tahan River, Pahang. 500 ft. 7th August, 1905.

A typical example of the peninsular race.

[A specimen of what was almost certainly this Marten was seen, but not secured, among rocks at over 6,000 ft.—H. C. R.]

6. *TUPAIA FERRUGINEA*, RAFFLES.

Tupaia ferruginea, Raffles, *Trans. Linn. Soc.*, xiii., p. 256 (1822) ; *Blanf. Mamm.*, p. 210 ; *Flower, op. cit.*, p. 336 ; Bonh., *P.Z.S.*, 1900, p. 874 ; *id.*, *op. cit.*, 1906, i., p. 4.

a.-d. 2 m., 2 f. Gunong Tahan. 3,300 ft. June, 1905.

e. f. " " 6th August, 1905.

f. m. Kuala Tembeling, Pahang River. 200 ft. 29th August, 1905.

The underparts are very pale in one of the males from Gunong Tahan, and the specimen from Kuala Tembeling differs in being much more rufous on the back, while the hairs on the underparts are creamy buff to their bases.

[Common everywhere.—H. C. R.]

7. *GYMNURA GYMNURA* (RAFFLES).

Viverra gymnura, Raffles, *Trans. Linn. Soc.*, xiii., p. 272 (1822).

Gymnura rafflesi (Horsf. & Vig.) ; *Blanf. Mamm.*, p. 220 ; *Flower, op. cit.*, p. 337.

a. f.ad. Kuala Teku, Tahan River, Pahang. 500 ft. 4th August, 1905.

This animal is extremely scarce in collections, so that a good series for examination is not available ; the Malayan form appears to be smaller than the Sumatran race, but the material at hand is so scanty that the apparent differences may be merely due to individual variation.

[Snared in a fence trap set for Argus Pheasants. The species possesses an intolerably offensive alliaceous odour.—H. C. R.]

8. *CROCIDURA FULIGINOSA* (BLYTH).

Sorex fuliginosa, Blyth, *J.A.S.B.*, xxiv., p. 362 (1856).

Crocidura fuliginosa (Blyth) ; *Blanf. Mamm.*, p. 242 ; Bonh., *op. cit.*, p. 14.

a., b. f. Gunong Tahan. 5,800 ft. June and July, 1905.

[One of these specimens was dislodged from beneath a stone in broad daylight and seemed practically blind, and the other was trapped with rice as bait in the bed of a stream. The species seems to have a very wide range in altitude, being also recorded from the Larut Hills at 4,000 ft. (A. L. Butler) and from Biserat which does not exceed 300 ft.—H. C. R.]

9. PTEROPUS VAMPIRUS (LINN.).

Vespertilio vampyrus, Linn., *Syst. Nat.*, i., p. 31 (1758).

Pteropus edulis, Geoffr., *Blanf. Mamm.*, p. 259; *Flower, op. cit.*, p. 339.

Pteropus vampyrus (Linn.); *Bonh., op. cit.*, p. 14.

a., b. m. Kuala Tembeling, Pahang River. 200 ft. 26th August.

Local and sporadic, but common wherever and whenever found.

The collection contains a single specimen of a Bat, which appears to have been hitherto undescribed. It belongs to the scarce genus *Cælops*, and I propose for it the name.

10. CÆLOPS ROBINSONI, *sp. nov.*

Very similar to *C. frithii*, from which it differs chiefly in its smaller size.

In colour it is dark brown, each hair being rather paler at the tip. The metacarpal bone of the thumb is very long and entirely encased in the wing membrane, but the phalanx, though extremely short and bearing a strong claw, is quite free. Blanford's statement (*Faun. Brit. Ind. Mamm.*, p. 291) that in *C. frithii* "the thumb is included in the membrane to the base of the claw" must have been an oversight as in *C. frithii*, the terminal phalanx is free, and in this respect does not differ from the species under consideration.

The nose leaf is in the main similar to that of *C. frithii*. The sella is fairly broad and slightly narrower at its upper end, whereas in *C. frithii* it is narrowest at its base, while the lower supplementary leaf let in the present species is also broader and rounder and less acutely pointed. The margin of the posterior leaf is smooth and uniform in outline, except for a bold shield-shaped protuberance in the middle line. The pore behind the leaf, with its pencil of hairs, is well developed.

DIMENSIONS of the type (in alc.).—Head and body, 33 mm.; ear, 14 mm.; forearm, 37 mm. (the forearm of *C. frithii* is 41 mm. and of *C. bernsteini*, 42 mm.).

HABITAT.—Gunong Tahan at 500 ft., Pahang.

TYPE.—Ad., collected on Gunong Tahan by Mr. Robinson. This species is the smallest of the genus, so far known, and its size alone will enable it to be easily recognised from its congener.

[Captured in the young rolled up leaf of a wild banana.—H. C. R.]

11. RHINOLOPHUS TRIFOLIATUS, TEMM.

Rhinolophus trifolius, Temm., *Mon. Mamm.*, ii., p. 27, pl. 31 (1835); *Blanf. Mamm.*, p. 272; *Flower, op. cit.*, p. 341; *Ands. Ann. Mag. Nat. Hist.* (7), xvi., p. 249 (1905).

a. in alc. Gunong Tahan, Pahang. 500 ft.

This specimen, so Mr. Knud Anderson informs me, is, although fully grown, young; the fully adult individuals being much lighter in colour. Great care must be taken to distinguish this species from *R. sedulus* (Ands., loc. cit., p. 347), which externally bears a striking resemblance to *R. trifolius*, and can only be distinguished with certainty by its skull characters.

12. RATUFA BICOLOR MELANOPEPLA, MILL.

Ratufa melanopepla, Miller, *Proc. Wash. Acad. Sci.*, ii., p. 71 (1900).

Ratufa bicolor (Sparrm.); *Blanf. Mamm.*, p. 373; *Flower, op. cit.*, p. 354; *Bonh., op. cit.*, p. 18.

a. m. ad. Kuala Tembeling, Pahang River. 200 ft. 22nd August, 1905.

b. f. „ Kuala Teku, Tahan River, Pahang. 500 ft. 3rd August, 1905.

Further material has, as I anticipated (*Fascic. Malay. Zool.*, i., p. 19), proved the Malayan form to be subspecifically distinct from the true *R. bicolor* which occurs in Java, one of the chief points of difference being the large and conspicuous light tips to the hairs of the tail. The two specimens in this collection are especially interesting, as showing two stages of the bleaching across the rump. In the female, the whole of the back (except the rump) is of a uniform deep purplish-brown, almost black, on the rump the hairs are of a much lighter brown as well as being coarser and rougher to the touch. In the male, the back and rump are practically uniform in colour, the hair being of a dark glossy purplish-brown, most of them minutely annulated or tipped with red, and these red tips are most conspicuous on the outside of the thighs across the lower back.

[Speaking generally, in the southern half of the Malay Peninsula, this species is not nearly so common as the following. The present form is, however, frequently found in villages and orchards, which, so far as my experience goes, is never the case with *Ratufa affinis aureiventer*.

Near our 8th Camp on Gunong Tahan at an altitude of about 5,300 ft. I watched for some time a Squirrel of this type, differing only in its apparently larger size and in having the ears very markedly tufted. Not having a gun with me at the moment, I was unable to secure it, and it was never seen again. Not improbably it was *Ratufa gigantea* (McClell.), which is reputed to occur in the north of the Peninsula.—H. C. R.]

13. RATUFA AFFINIS AUREIVENTER (GEOFFR.).

Sciurus aureiventer, Is. Geoffr. Guérin, *Mag. Zool.*, 1832; *id.*, *Voy. Ind. Orient.* Belanger, p. 150 (1832).

Ratufa affinis aureiventer (Geoffr.); *Bonh., Ann. Mag. Nat. Hist.* (7), v., p. 495 (1900).

Ratufa bicolor (*partim*) of most authors.

a.-e. 2 m., 3 f. Kuala Teku, Tahan River, Pahang. 500 ft. July and August, 1905.

A very typical series.

[Common in submontane tracts and deep jungle throughout the southern part of the Peninsula.—H. C. R.]

14. SCIURUS HIPPURUS, GEOFFR.

Sciurus hippurus, *Is. Geoffr. Études Zool.*, No. 6, pl. 6 (1832) *Flower, op. cit.*, p. 356; *Bonh., op. cit.*, p. 19.

a. m. Gunong Tahan (6th Camp). 3,300 ft. 4th June, 1905.

b. m. Kuala Teku, Tahan River. 500 ft. 31st July, 1905.

Evidently a somewhat scarce species in the Peninsula.

15. SCIURUS CONCOLOR, BLYTH.

Sciurus concolor, *Blyth, J.A.S.B.*, xxiv., p. 374 (1855); *Bonh., op. cit.*, p. 20.

Sciurus caniceps, *Gray, Blanf. Mamm.*, p. 380; *Flower, op. cit.*, p. 356.

a., b. f. Kuala Tembeling, Pahang River. 200 ft. August, 1905.

[Though very common in Selangor and Pahang, this squirrel seems to reach its southern limit in the territory of Malacca. It is not recorded from Johore.—H. C. R.]

16. SCIURUS TENUIS, HORSF.

Sciurus tenuis, *Horsf., Zool. Res.* (1824); *Flower, op. cit.*, p. 357; *Bonh., P.Z.S.*, 1906 (i), p. 5.

a.-f. 4 m., 2 f. Gunong Tahan, Pahang. 3,300 ft. June, 1906.

These belong to the dark-coloured form of this squirrel and represent, therefore, the true *Sc. tenuis*.

On Gunong Tahan three specimens of a squirrel, nearly allied to *Sc. tenuis*, were procured, which I propose to call.

17. SCIURUS TAHAN, *sp. nov.*

Very similar in general appearance to *Sc. tenuis*, from which it differs in being larger and darker. The general colour of the back is very dark with numerous yellow annulations to each hair. The general greyish appearance of the true *Sc. tenuis* is quite absent. The yellowish-patch on the outside of the thighs, a noticeable feature in the true *Sc. tenuis*, is hardly to be made out. Tips of the hairs of the tail are yellow not white, and the tail shows distinct black and yellow annulations, a good distinctive character.

The skull in its general shape is not unlike that of *Sc. tenuis*, but differs in its very much larger size.

DIMENSIONS of type in the flesh.—Head and body, 155 mm.; tail, 104 mm.; hind-foot, 36 mm.; ear, 14 mm.

Corresponding dimensions of typical *tenuis* from lower down on the same mountain: Head and body, 133 mm.; tail, 115 mm.; hind-foot, 29 mm.; ear, 13 mm.

	Greatest length.	Basilar length.	Zygo- matic breadth.	Length of nasals.	Length of palate to henselson.	Length of molar series.
SKULL.—	<i>S. tenuis</i> ,					
	S. Johor 38. ...	30 ...	23 ...	11 ...	15 ...	7
	<i>S. tahan</i> ,					
	type ...	43.5 ...	36 ...	26 ...	12 ...	17 ... 8

HABITAT.—Gunong Tahan, 5,300 ft.

TYPE.—No. 44, *m.ad.*, collected by Mr. Robinson on the 9th July, 1905:

The collection contains two other specimens, one of which, a female, was got at the same place on the 1st of July, while the other, a male, was shot about 2,000 ft. lower down the same mountain on the 1st of June.

Although extremely like *Sc. tenuis* in external appearance, its larger size, darker colour and annulated tail will enable it to be easily recognised.

18. *SCIURUS CASTANEOVENTRIS GRISEOPECTUS*, BLYTH.

Sciurus griseopectus, *Blyth (nec Gray)*; *J.A.S.B.*, xvi., p. 873 (1847).

Sciurus c. griseopectus, *Blyth, Bonh., Ann. & Mag. Nat. Hist.* (7), vii., p. 311 (1901).

a.-o. 8 m., 7 f. Gunong Tahan. 3,300-6,000 ft. June, 1905.

It is extremely interesting to receive a fine series of this hitherto little-known form. Although originally described from Assam, there can be little doubt that it is far more abundant in the mountains of the Peninsula.

Mr. Robinson, on my writing for further information on this species, replies: "A squirrel of this type is very common above 4,000 ft. on all the mountains of the Peninsula, but, on the central range and on the western side, it seems to lack the grizzled median ventral stripe and to be referable to the typical *Sc. erythraeus*."

So far only two examples of *Sc. erythraeus* (which is a mountain species ranging from Bhutan through Assam and Manipur to Upper Burmah) have been recorded from the Peninsula: one brought home by the "Skeat" Expedition from Gunong Inas, Perak; and the other by Messrs. Robinson and Annandale from the Semangko Pass on the borders of Selangor and Pahang.

In my paper quoted above I enter fully into my reasons for considering the present form as being a geographical race of the

Chinese species *Sc. castaneiventris*, and the fact that it occurs chiefly on the eastern side of the Peninsula and is not unlike the Formosan race *Sc. thaiwanensis centralis*, certainly supports this view.

With the advent of more material the occurrence of *Sc. erythraeus* and *Sc. c. griseopectus* on the Peninsula will need further careful consideration.

The present series is very uniform and shows no variation, either in the shade of the chestnut colour, which is dark as in *Sc. erythraeus*, or in the extent of the chestnut area.

19. *SCIURUS VITTATUS*, RAFFLES.

Sciurus vittatus, *Raffles, Trans. Linn. Soc.*, xiii., p. 259 (1822); *Bonh., op. cit.*, p. 22; *id.*, *P.Z.S.*, 1906 (1), p. 5.

Sciurus notatus, *Bodd., Flower, op. cit.*, p. 358.

a.-d. *m.m.* Gunong Tahan. 3,300 ft. June, 1905.

e. *m.* Kuala Tembeling, Pahang River. 200 ft. 26th August, 1905.

In my paper, this year, on Mr. Kloss' collection, I have gone into the supposed forms of this species so thoroughly that there is nothing more to add. These specimens all show the red tip to the tail and some are slightly greyer than others, especially on the tail.

[I have elsewhere commented on the curious fact that on the eastern side of the Peninsula this species is confined mainly to the jungle, while *Sc. concolor* is the common village Squirrel, though on the western side exactly the reverse obtains.—H. C. R.]

20. *FUNAMBULUS INSIGNIS PENINSULÆ*, MILLER.

Funambulus peninsulæ, *Miller, Smithsonian. Misc., Coll.*, xlv., p. 25 (1903).

Funambulus insignis peninsulæ, *Mill., Bonh., P.Z.S.*, 1906 (1), p. 7.

Funambulus insignis (F. Cuvier); *Flower, op. cit.*, p. 360.

a. *f.* Kuala Tembeling, Pahang River. 200 ft. 21st August, 1905.

In default of further material I place this example under Mr. Miller's name. It agrees exactly with those recently sent home by Mr. Kloss.

[Of five specimens in the Selangor Museum collected at various places from Southern Perak to Negri Sembilan and in height from about 200 ft. to nearly 4,000 ft., I find that one from Bukit Kutu, Selangor, 3,000 ft., collected in August, differs from the rest in being much more rufescent above and in having the under surface, which in the other specimens is nearly white, strongly rufescent, especially in the region of the thighs, which approach golden orange in colour. The greyer, white specimens are indistinguishable from the form described by Mr. Bonhote as *F. insignis jalorensis* from Bukit Besar in the Patani States.



H. Goodchild, del et lith.

Huth, imp.

FUNAMBULUS RUFIGENIS BELFIELDI.

It is possible that all the Peninsular *Funambuli* are really one race, and that the differences are really seasonal and not subspecific.—H. C. R.]

21. *FUNAMBULUS LATICAUDATUS* (M. S.).

Rhinosciurus laticaudatus, Müll., *Schleg. Verh.*, 1839, p. 100, pl. 5, fig. 1-3; *Robinson, Journ., Fed. Mal. States Mus.*, p. 60 (1905).

Funambulus laticaudatus (M. S.); *Flower, op. cit.*, p. 359.

a. Kuala Tembeling, Pahang River. 20th August, 1905.

A very bright-coloured specimen with pure white underparts.

Rare and local in the Malay Peninsula and very easily overlooked.

A single specimen of a squirrel, allied to *F. rufigenis*, appears to be sufficiently distinct to be worthy of subspecific rank, and I propose to call it after Mr. H. C. Belfield, British Resident of Selangor, who has taken a keen interest in the Zoology of the Malay Peninsula.

22. *FUNAMBULUS RUFIGENIS* BELFIELDI, *subsp. nov.*

(Plate I.)

Sciurus rufigenis, *Blanford, Robinson, Journ., Fed. Mal. States Mus.*, p. 65 (1905).

Differs from the typical *rufigenis* in having the back paler and slightly grizzled. The hairs are dark as their bases with reddish tips, whereas in the typical *F. rufigenis* they are of a much brighter red, which is continued to their base. The small patch behind the ear, which in the typical form is buffish, is in this form pure snow-white. The tips of the hairs on the hind-feet and thighs are also redder. Except for these difference, it closely resemble the typical *F. rufigenis*.

The skull shows no distinctive characters.

DIMENSIONS of the type (measured in the flesh).—Head and body, 203 mm.; tail, 143 mm.; hind-foot, 42 mm.; ear, 19 mm.

SKULL.—Greatest length, 54.5 mm.; basal length, 45 mm.; length of palate to hensenion, 24 mm.; interorbital breadth, 17 mm.; length of nasals, 18 mm.; length of molar series, 10.5 mm.

HABITAT.—Gunong Ulu Kali, Selangor, alt. 4,800-5,800 ft.

TYPE.—Ad., collected by Mr. H. C. Robinson on the 9th February, 1906.

The much redder cheeks and snow-white patch behind the ear form very characteristic marks of this race by which it may be easily distinguished. The type locality of the true *F. rufigenis* is the forest region, east of Moulmein, at an altitude of 5,000 ft.

[This Squirrel, of which several specimens have been obtained recently, is very abundant on the above-mentioned mountain, which, it should be noted, has no connection with Gunong Tahan, being nearly a hundred miles distant. It lives mainly among the crowns of the giant pandanus which form a characteristic feature of the higher elevations of certain portions of the Peninsular main range, of which Gunong Ulu Kali is the highest peak in Selangor.—H. C. R.]

23. MUS CILIATUS, BONHOTE.

Mus ciliatus, *Bonh.*, *P.Z.S.*, 1900, p. 879.

a. m. Gunong Tahan. 3,300 ft. 24th June, 1905.

This individual agrees very closely with the type specimens in all particulars. As there was some slight confusion over the exact measurements in the former specimens, I append the measurements of the present example taken in the flesh:

Head and body, 245 mm.; tail, 333 mm.; hind-foot, 47 mm.; ear, 27 mm.

[Though nowhere common, this magnificent Rat seems widely spread over the mountains of the Peninsula. The types are from Gunong Inas in the north of Perak, while the Selangor Museum possesses a fine specimen trapped on Bukit Kutu, Ulu Selangor, at a height of about 3,000 ft.—H. C. R.]

24. MUS CREMORIVENTER, MILL.

Mus cremoriventer, *Miller*, *Proc. Biol. Soc. Wash.*, xiii, p. 144 (1900); *Bonh.*, *op. cit.*, p. 36.

a. f. Gunong Tahan. 4,700 ft. 4th July, 1905.

This specimen appears to be rather larger than the typical series from which this species was described and from the specimens in the British Museum, but it agrees in all its other characters with the description, so that I have no hesitation in referring it to *M. cremoriventer*, and more especially so as the hind-foot measurements agree. The dimensions of this specimen are:

Head and body, 134 mm.; tail, 185 mm.; hind-foot, 28 mm.; ear, 18 mm.

25. MUS INAS, BONH.

Mus inas, *Bonh.*, *P.Z.S.*, 1906 (1), p. 9, pl. 1.

a. f. Gunong Tahan, Pahang. 3,300 ft. 1st June, 1905.

Agrees very well with the type, but is slightly paler.

26. MUS CONCOLOR, BLYTH.

Mus concolor, *Blyth*, *J.A.S.B.*, xxviii, p. 295 (1859); *Blanford*, *Mamm.*, p. 408; *Flower*, *op. cit.*, p. 361; *Bonh.*, *op. cit.*, p. 38; *id.*, *P.Z.S.*, 1906 (1), p. 11.

a.-c. 1 m., 2 f. Kuala Lipis, Pahang. 300 ft. 15th May, 1905.

27. HYSTRIX GROTEI (GRAY).

Acanthochaerus grotei, *Gray*, *P.Z.S.*, 1866, p. 310.

Hystrix longicauda, *Marsden*; *Flower*, *op. cit.*, p. 364.

Hystrix grotei (Gray); *Bonh.*, *op. cit.*, p. 39.

a. Kuala Tembeling, Pahang River. 200 ft. August, 1905.

An immature specimen, closely resembling the type.

28. TRAGULUS KANCHIL RAVUS, MILL.

Tragulus rarus, Mill., *Proc. Biol. Soc. Wash.*, xv., p. 173 (1902).

Tragulus javanicus (Gmel.) ; *Blanf. Mamm.*, p. 556 ; *Flower, op. cit.*, p. 374.

Tragulus kanchil affinis, Gray ; *Bonh., Ann. Mag. Nat. Hist.* (7), xi. (1903) ; *id., op. cit.*, p. 42.

a., b. m., f. Kuala Tembeling, Pahang River. 200 ft. August, 1905.

It appears that *T. affinis*, as originally described, was a *Nomen nudum* applied to the so-called type specimen which is undoubtedly of Malay origin. It was, however, not until Mouhot's Cambodian collection came in that *T. affinis* was properly described (*P.Z.S.*, 1861, p. 138). Under these circumstances, Mr. Miller's name of *rarus* has to stand for the Peninsular form and Gray's *affinis* for the Cochin-China form, my *T. pierrei* becoming a synonym of the last.

DESCRIPTION OF PLATE I.

FUNAMBULUS RUFIGENIS BELFIELDI, *subsp. nov.*

(P. 9 *supra.*)

LOCALITY.—Gunong Ulu Kali, Selangor, 4,800-5,800 ft.

II.

BIRDS.

BY

W. R. OGILVIE-GRANT.

BRITISH MUSEUM (NATURAL HISTORY), CROMWELL ROAD, LONDON.

II.

REPORT ON THE BIRDS.

BY W. R. OGILVIE-GRANT.

BRITISH MUSEUM (NATURAL HISTORY), CROMWELL ROAD, LONDON.

FIELD NOTES.

BY H. C. ROBINSON.

(WITH TWO PLATES.)

THE bulk of the large Collection of Birds, forming the subject of the present memoir, was procured by Messrs. L. Wray and H. C. Robinson on Gunong Tahan, the high mountain on the northern border of Pahang, during the summer and autumn of 1905; a few Birds subsequently obtained during a brief expedition to Gunong Ulu Kali in the early part of 1906 are also included. The last-named mountain, rising to an elevation of about 6,000 ft., and one of the highest points in Selangor, terminates the range known as Mengkuang Lebah, from whence Mr. Robinson has already forwarded specimens of *Polyplectron inopinatus* (Rothsch.), *Myiophoneus robinsoni*, Grant, and other species of great interest and rarity.

The close affinity between the high-land Fauna of Sumatra and Borneo and that of the Malay Peninsula is clearly demonstrated in the present collection. Seven of the birds appear to represent undescribed forms—viz., a remarkable Jay (*Cissa robinsoni*), which may be regarded as representing *C. jefferyi*, Sharpe, from Kina Balu; a White-eye (*Zosterops tahanensis*), being a dark form of *Z. aureiventer*, Hume; a Shortwing (*Brachypteryx wrayi*), allied to *B. nipalensis* (Moore), but with a darker reddish-brown female; a small Fly-catcher (*Muscicapula malayana*) near *M. hyperythra* (Blyth), but darker, the female especially so; a very dark-coloured and quite distinct Green Woodpecker (*Gecinus robinsoni*); a very rare small Owl (*Heterosops vulpes*), a rufous-coloured representative of *H. luciae* (Sharpe), from Kina Balu; and, lastly, a very distinct green Fruit-Pigeon (*Sphenocercus robinsoni*), most nearly allied to *S. permagnus* (Stejn.), from the Loo-Choo Islands, and more remotely to *S. korthalsi* from Sumatra and Java.

The following species are new to the British Museum—viz., *Pyrrhula waterstradti*, which was obtained both on Gunong Tahan and Gunong Ulu Kali, *Pterythius tahanensis*, *Suya waterstradti* and *Siva malayana*, of each of which large series were procured.

Among the most interesting birds I may specially mention the large series of *Pericrocotus*, which seems to show that *P. croceus*, Sharpe, is founded on a mere colour variety of *P. montanus*, *Syrnium maingayi*, Hume, a very rare species of Wood-owl; *Rheinardtius nigrescens* (Rothsch.), the rare Malayan crested Argus; and *Polyplectron inopinatus* (Rothsch.), the beautiful Peacock-Pheasant, recently described by Mr. Rothschild, who considered it to belong to the genus *Chalcurus*.

Throughout the following paper, for the sake of brevity, my Report on the Birds in the Fasciculi Malayenses is quoted throughout as "Grant:"

CORVIDÆ.

1. CISSA ROBINSONI, GRANT.

(Pl. III., Fig. 1.)

Cissa robinsoni, Grant, *Bull. B.O.C.*, xix., No. cxxvii., p. 9 (1906).

Adult male, most nearly allied to *C. minor*, Cab., but the innermost secondaries have wider white tips indistinctly margined internally with blackish, and lack the strongly marked subterminal black bars characteristic of *C. minor* and other allies. From *C. jefferyi*, Sharpe, it differs in having a much longer tail and very much wider tips and subterminal black bars to the outer tail-feathers; the white tips to the secondaries are likewise very different. Iris, whitish wattle round eye, carmine; bill and feet, orange-vermilion.

Total length: ca., 13.0 in.; culmen, 1.57 in.; wing, 5.35 in.; tail, 6.15 in.; tarsus, 1.7 in.

a. m. Gunong Tahan. 6,500 ft. 15th July, 1905. (No. 378).

[I never saw this bird myself, and it must be very rare as only one other specimen, or rather the remains of one that had been killed by some carnivore, was noted, though we all hunted for it assiduously for a week.

I am inclined to think that it was possibly a stray specimen from a more thickly wooded slope on the Kelantan side of the range, which, from want of transport and supplies, we were unable to reach.

The addition of the genus *Cissa* to the fauna of the Malay Peninsula is perhaps the most noteworthy feature of our bird collection.—H. C. R.]

2. PLATYSMURUS LEUCOPTERUS (TEMML.).

Platysmurus leucopterus, Grant, p. 66.

a., b. f. Kuala Tembeling, Pahang River. 200 ft. 2nd September, 1905. (Nos. 635, 636).

Iris, red; bill and feet, black.

[A noisy and quarrelsome bird, very local in its distribution; usually found in secondary jungle near villages, but not in orchard or garden-land.—H. C. R.]

EULABETIDÆ.

3. EULABES JAVANENSIS (OSBECK).

Eulabes javanensis, *Grant*, p. 66.

a.-d. m., f. Kuala Tembeling, Pahang River. 200 ft. 21st-28th August, 1905. (Nos. 551, 558, 600, 609).

Iris, dark brown; lappets, rich cadmium-yellow, lemon at the base; bill, orange, yellow at the tip; feet, pale-chrome.

[Common round villages and in open forest country, not as a rule found in thick jungle.—H. C. R.]

DICRURIDÆ.

4. CHAPTIA ÆNEA (VIEILL.).

Chaptia ænea, *Grant*, p. 67.

a., b. f. Kuala Teku, Tahan River. 500 ft. August, 1905. (Nos. 518, 571).

5. DISSEMURUS PARADISEUS (LINN.).

Dissemurus paradiseus, *Grant*, p. 68.

a. m. Kuala Tembeling, Pahang River. 200 ft. 22nd August, 1905. (No. 564).

b.-d. m., f. Kuala Teku, Tahan River. 500-1,000 ft. July and August, 1905. (Nos. 438, 453, 481).

ORIOOLIDÆ.

6. ORIOLUS XANTHONOTUS, HORSE.

Oriolus xanthonotus, *Sharpe*, *Cat. Birds, Brit. Mus.*, iii., p. 213 (1877).

a.-c. m. vix. ad., m. imm. et f. Kuala Teku, Tahan River. 500-1,000 ft. August, 1905. (Nos. 487, 476, 488).

d. f. imm. Kuala Tembeling, Pahang River. 200 ft. 30th August, 1905. (No. 613).

Iris, red; bill, reddish-brown; feet, bluish lead-colour.

[Usually found singly or in pairs in fairly open forest, and by no means a common bird in the Malay Peninsula.

It is curious that *Oriolus consanguineus* (Wardlaw-Ramsay), which is common on most of the Peninsular mountains, is almost certainly absent from Gunong Tahan, as it was not obtained either by Waterstradt or ourselves.—H. C. R.]

PLOCEIDÆ.

7. MUNIA LEUCOGASTER (BLYTH).

Munia leucogastra, *Hartert*, *Nov. Zool.*, ix., p. 578.

a. m. adult. Kuala Tembeling, Pahang River. 200 ft. 5th Sept., 1905. (No. 659).

8. MUNIA MAJA (LINN.).

Munia maja, *Grant*, p. 69.

a., b. *m.* Kuala Tembeling, Pahang River. 206 ft. August, 1905. (Nos. 550, 562).

Iris, dark brown; bill, pale lead-colour; feet, bluish lead-colour.

9. MUNIA ACUTICAUDA, HODGS.

Munia acuticauda, *Grant*, p. 69.

a. *m.* Kuala Tembeling, Pahang River. 200 ft. 21st August, 1905. (No. 557).

10. PLOCEUS ATRIGULA, HODGS.

Ploceus atrigula, *Grant*, p. 69.

a.-f. *m., f.* Kuala Tembeling, Pahang River. 200 ft. August and September, 1905. (Nos. 578, 579, 647, 649, 656, 657).

FRINGILLIDÆ.

11. PYRRHULA WATERSTRADTI, HARTERT.

Pyrrhula waterstradti, *Hartert*, *Nov. Zool.*, ix., p. 577 (1902).

a.-m. *m., f.* Gunong Tahan (8th and 9th Camps). 5,100-7,000 ft. June and July, 1905. (Nos. 144, 193, 194, 237, 245, 246, 282, 298, 364, 365, 429, 430).

n. *f.* Gunong Ulu Kali. 4,700-5,800 ft. 10th February, 1906.

Iris, yellowish; bill, black, shading into lead-colour at the base of the culmen; feet, pinkish flesh-colour.

This Bullfinch is new to the British Museum.

[This fine Bullfinch, perhaps the most interesting bird on Gunong Tahan, is by no means uncommon on what may perhaps be called the moorland zone of the mountain; but is distinctly wild and difficult to approach. It flies in pairs and frequents the boughs of two kinds of stunted conifer and a shrubby plant of *Vaccinium* type on the berries of which it largely feeds, though minute insects were also found in the crops of two specimens examined. The note is a faint pipe, like that of the British species, but very much feebler. Its flight is powerful and long sustained and the birds are very restless, never remaining long in one place.—H. C. R.]

MOTACILLIDÆ.

12. ANTHUS RUFULUS, VIEILL.

Anthus rufulus, *Grant*, p. 71.

a.-d. *m., f.* et *f. imm.* Kuala Tembeling, Pahang River. 200 ft. August and September, 1905. (Nos. 541, 611, 663).

Iris, hazel; upper mandible, black, lower horn-colour; feet, brownish-flesh.

13. MOTACILLA MELANOPE, PALL.

Motacilla melanope, *Grant*, p. 71.

a., b. m. et f. imm. Kuala Tembeling, Pahang River. 200 ft. September 1905. (No. 662).

NECTARINIIDÆ.

14. ARACHNOTHERA LONGIROSTRIS (LATH.).

Arachnothera longirostris, *Grant*, p. 72.

a., b. m. Gunong Teku, Tahan River. 500 ft. July and August. (Nos. 451, 461).

Iris, brown; upper mandible, black, lower yellowish with the base orange; feet, pinkish-yellow.

15. ARACHNOTHERA CHRYSOGENYS (TEMN.).

Arachnothera chrysogenys, *Grant*, p. 72.

a. f. Kuala Tembeling. 200 ft. 25th August, 1905. (No. 591).

16. ARACHNOTHERA MAGNA, HODGS.

Arachnothera magna, *Grant*, p. 73.

a. f. Gunong Ulu Kali. 7th February, 1906.

17. ARACHNOTHERA FLAVIVENTRIS, GADOW.

Arachnothera flavigaster, *Eyton.*, *Hartert.*, *Nov. Zool.*, ix., p. 574 (1902).

a., b. m., f. Kuala Tembeling. 200 ft. August and September, 1905. (Nos. 607, 637).

Iris, hazel; bill, dark horn, reddish at the base; feet, gamboge.

18. ANTHOTHREPTES HYPOGRAMMICA (S. MÜLL.).

Anthothreptes hypogrammica, *Grant*, p. 73.

a., b. m. Gunong Tahan. 3,300 ft. June. (Nos. 41, 68).

Iris, dark brown; bill and feet, black.

19. ANTHOTHREPTES MALACCENSIS (SCOP.).

Anthothreptes malaccensis, *Grant*, p. 73.

a.-c. m. Kuala Tembeling River. 200 ft. August and September. (Nos. 612, 625, 660).

20. ÆTHOPYGA WRAYI, SHARPE.

Æthopyga wrayi, *Grant*, p. 74.

a.-r. m., f. et imm. Gunong Tahan. 3,300-7,000 ft. May and July, 1905. (Nos. 10, 40, 45, 65, 91, 102, 109, 139, 145, 190, 191, 247, 279, 392, 393, 398, 400).

DICÆIDÆ.

21. PRIONOCHILUS THORACICUS (TEMN.).

Prionochilus thoracica, *Sharpe*, *Cat. Birds, Brit. Mus.*, x., p. 67 (1885).

a.-c. m., f. Gunong Tahan. 3,300 ft. June, 1906. (Nos. 54, 75, 76).

Iris, brown; bill, black; feet, dark slate-colour or black.

This species does not appear to have been met with in the Malay Peninsula by recent collectors, such as Mr. L. Wray, Mr. Laidlaw (Skeat Expedition), Messrs. Robinson and Annandale, Mr. A. L. Butler and Mr. Waterstradt.

22. PRIONOCHILUS MACULATUS (TEMN.).

Prionochilus maculatus, *Hartert, Nov. Zool.*, ix., p. 575 (1902).

a., b. m. Kuala Tpk, Tahan River. 500 ft. August, 1905. (Nos. 472, 485).

Iris, brown; bill, black; basal half of lower mandible and feet plumbeous.

23. DICEUM CRUENTATUM (LINN.).

Dicaeum cruentatum, *Grant*, p. 74.

a. m. Kuala Tembeling, Pahang. 200 ft. 25th August, 1905. (No. 589).

24. DICEUM TRIGONOSTIGMA (SCOP.).

Dicaeum trigonostigma, *Grant*, p. 75.

a. m. Gunong Tahan. 3,300 ft. 1st June, 1905. (No. 17).

Iris, brown; bill, black; feet, dark green.

25. DICEUM IGNIPECTUS (HODGS.).

Dicaeum ignipectus, *Grant*, p. 75.

a. [m.] Gunong Tahan. 5,300 ft. 23rd June. (No. 192).

The bill in this bird is not larger than usual. As mentioned in a previous paper cited above, the bird from Telôm had an abnormally large bill.

ZOSTEROPIDÆ.

26. ZOSTEROPS TAHANENSIS, GRANT.

Zosterops aureiventer, *Hartert (nec Hume), Nov. Zool.*, ix., p. 575 (1902).

Zosterops aureiventer, *Grant (nec Hume)*, p. 75.

Zosterops tahanensis, *Grant, Bull., B.O.C.*, xix., No. cxxvii., p. 9 (1906).

Adult males differ from typical *Z. aureiventer*, Hume, in having the upper parts of a rather darker green, the under parts darker grey. The yellow medium stripe varies in width in different individuals and cannot be regarded as an important character.

In addition to the male in the present collection I have examined five specimens from Gunong Tahan, collected by Mr. Waterstradt, and now in the Tring Museum.

Iris, lead-colour; bill, plumbeous, dark at the tip.

a. m. Gunong Tahan (8th Camp). 5,300-6,000 ft. 7th July, 1905. (No. 306).

[Evidently scarce as this was the only specimen seen or shot, though Waterstradt apparently found it common on the mountain.

What is presumably the typical *Z. aureiventer* is very abundant on the coast of Selangor throughout the year.—H. C. R.]

SITTIDÆ.

27. DENDROPHILA AZUREA (LESS.).

Dendrophila azurea, *Grant*, p. 76.

a. m. Gunong Tahan (9th Camp). 5,100-7,000 ft. 17th July, 1905.
(No. 396).

Iris, greenish-yellow; bill, livid bluish-green, black at tip; feet, similar, but more bluish; claws, black; orbital skin, livid greenish-white.

[This was the only specimen seen on Gunong Tahan. It is extraordinarily local in the mountains of the Malay Peninsula, being very common on some and entirely absent from others. It is a very troublesome bird to collect, as it frequents the trunks of quite small trees, round which it dodges with remarkable agility.—H. C. R.]

28. DENDROPHILA SATURATION, HARTERT.

Dendrophila saturation, *Grant*, p. 76.

a. m. Gunong Tahan (6th Camp). 3,300 ft. 2nd June, 1905. (No. 23).

The ear-coverts are bluer than in *D. lilacea*.

Iris, yellow; orbital skin, greenish; bill, vermilion, black at tip; tarsi, dark brown.

[As far as my experience goes, this species is purely a submontane form, and the elevation indicated above probably represents the highest altitude it attains. The intensity of the lilac colour of the lower surface varies much, the present specimen, for instance, being of a far duller tint than others obtained in December on Gunong Angsi, a mountain in Negri Sembilan, at a height of from 2,500-3,000 ft.—H. C. R.]

PARIDÆ.

29. MELANOCHLORA SULTANEA (HODGS.).

Melanochlora sultanea, *Grant*, p. 76.

a.-c. m. et m. imm. Gunong Tahan (6th Camp). 3,300 ft. 11th-13th June, 1905. (Nos. 84, 85, 534).

Iris, red; bill, black; feet, bluish-grey.

[By no means common on Gunong Tahan, but elsewhere it ranges up the hills to about 4,000 ft.—H. C. R.]

PRIONOPIDÆ.

30. TEPHRODORNIS GULARIS (RAFFL.).

Tephrodornis gularis, *Hartert*, *Nov. Zool.*, ix., p. 576 (1902).

a. m. Kuala Teku, Tahan River. 500-15,000 ft. 2nd August, 1905.
(No. 475).

Iris and bill, black; feet, greyish.

31. HEMIPUS PICATUS (SYKES).

Hemipus picata, *Hartert, Nov. Zool.*, ix., p. 576 (1902).

a., b. m., f. Gunong Tahan. 3,300 ft. 5th June, 1905. (Nos. 46, 47).

Iris, brown; bill and feet, black.

LANIIDÆ.

32. PTERYTHIUS ÆRALATUS, TICKELL.

Pterythius æralatus, *Hartert, Nov. Zool.*, ix., p. 576 (1902).

a., b. m., f. Gunong Tahan (8th Camp). 5,300-6,000 ft. 8th-9th July, 1905.
(Nos. 308, 335).

c.-d. m., f. Gunong Ulu Kali. 4,800-5,800 ft. 7th February, 1906.

Iris, hazel or chestnut; bill, lead-colour, black on the culmen and tip; feet, dull flesh-colour.

The above-mentioned pair (c.-d.) from Gunong Ulu Kali were believed by Mr. Robinson to belong to a form distinct from *P. æralatus*—viz., *P. cameroni* (Salvad). I have, however, looked carefully into the matter and can only endorse Dr. Sharpe's opinion on the subject (cf. P.Z.S., 1888, p. 276).

[Tickell's Shrike-Tit frequents the better wooded parts of Gunong Tahan, mostly among trees growing on the precipitous face of the mountain. It keeps to the tops of the trees, and is consequently very difficult to obtain, though by no means uncommon. It flies in parties of six or seven, and is generally associated with *Alcippe peracensis*.—H. C. R.]

33. PTERYTHIUS TAHANENSIS, HARTERT.

Pterythius tahanensis, *Hartert, Nov. Zool.*, ix., p. 576.

a.-r. m., f. et m., f. imm. Gunong Tahan, above 5,000 ft. June and July, 1905.
(Nos. 121, 150, 151, 173, 174, 215, 222, 233, 236, 268, 269, 274, 281, 326,
373, 404, 418).

Young birds differ from the adult female in having the chin and throat whitish, and only the middle of the breast and belly faintly washed with yellow. This Shrike is new to the British Museum.

Iris, dark brown; bill, bluish lead-colour, paler at the tip; feet, pinkish-flesh; soles, orange.

[* Similar in habits to *Pterythius æralatus*, but frequents the more open country.—H. C. R.]

SYLVIIDÆ.

34. ORTHOTOMUS ATRIGULARIS, TEMM.

Orthotomus atrigularis, *Grant*, p. 77.

a.-c. m., f. Gunong Tahan. 3,300 ft. May and June, 1905. (Nos. 9, 19,
127).

d. f. Kuala Teku, Tahan River. 500 ft. 31st July, 1905. (No. 456).

e. f. Kuala Tembeling. 200 ft. 28th August, 1905. (No. 610).

Iris, hazel; bill, black, paler at the base; feet, brownish-yellow or flesh-colour.

* Since this paper was in type we have obtained the species on Gunong Ulu Kali, Selangor, at 5,000 ft.

35. CISTICOLA BEAVANI, WALDEN.

Cisticola beavani, Sharpe, *Cat. Birds, Brit. Mus.*, vii., p. 255 (1883).

a. m. Gunong Tahan. 5,100 ft. 17th August, 1905. (No. 397).

Iris, orange; bill, black; feet, pinkish flesh-colour.

36. PHYLLERGATES CINEREICOLLIS, SHARPE.

Phyllergates cucullatus cinereicollis, Hartert, *Nov. Zool.*, iv., p. 518 (1897).

Phyllergates cucullatus, Hartert (*nee Temm.*), *Nov. Zool.*, ix., p. 569 (1902).

a.-h. m., f. Gunong Tahan. 4,000-6,000 ft. June and July, 1905. (Nos. 104, 251, 265, 270, 278, 286, 296, 315).

Iris, yellowish; culmen, black; lower mandible, horn-colour; feet, dull horn-colour; soles, yellow.

This form is easily distinguished from *P. cucullatus* by the grey colour of the occiput and nape and the brighter olive-colour of the back.

37. SUYA WATERSTRADTI, HARTERT.

Suya waterstradti, Hartert, *Nov. Zool.*, ix., p. 568 (1902).

a.-n'. m., f. et m. imm. Gunong Tahan from 5,000 ft. to the summit. June and July, 1905.

(Nos. 59, 141, 147-149, 154, 170, 201, 210, 234, 239, 260-262, 273, 299, 317, 344, 345, 350, 366-368, 385-388, 401-403, 416, 419-421).

All the specimens in the large series of this Warbler procured by Mr. Robinson agree with the description of the type. It is quite evident that the species never has a black throat.

An immature male (No. 201) lacks most of the black markings on the breast, which is greyish instead of white. This Hill-Warbler is new to the British Museum.

Iris, dark brown; bill, black, brownish at the tip; feet, brownish flesh-colour.

[This Warbler, of which Waterstradt got only one specimen, is one of the commonest birds on Gunong Tahan, and this fact makes me believe that he was never on the mountain himself, but that possibly some of his men spent perhaps a day on it. The bird goes about in pairs, keeping low down amongst thin bushes, and is very active and restless, repeatedly flicking its tail in the air. Its note is a shrill *twee-twee, twee-twee*.

In all probability *Suya waterstradti* is peculiar to Gunong Tahan. No other mountain in the Peninsula presents similar physical features.—H. C. R.]

TURDIDÆ.

38. CITTOCINCLA TRICOLOR (VIEILL.).

Cittocincla tricolor, Grant, p. 79.

a. m. Kuala Tembeling, Pahang River. 200 ft. 5th September, 1905. (No. 655).

39. TRICHIXUS PYRRHOPYGUS (LESS.).

Trichixus pyrrhopygus, Sharpe, *Cat. Birds, Brit. Mus.*, vii., p. 32 (1883).

a. adult. Gunong Tahan. 3,000 ft. 20th June, 1905. (No. 529).

b. m. Kuala Teku, Tahan River. 500 ft. 8th August, 1905. (No. 506).

TROGLODYTIDÆ.

40. PNOEPYGA LEPIDA, SALVAD. (?)

Pnoepyga lepida, *Nov. Zool.*, ix., p. 570 (1902).

Pnoepyga pusilla, Sharpe (*nec Hodgs.*), *P.Z.S.*, 1888, p. 273.

a. m. Gunong Tahan (8th Camp). 5,300-6,000 ft. 3rd July, 1905. (No. 264).

b. m. " " " 12th " (No. 348).

c.-e. 2 m, f. jr., (9th Camp). 5,100-7,000 ft. 15th-17th July, 1905.
(Nos. 372, 394, 395).

This species, which is probably identical with *P. lepida* (Salvad.), is evidently most closely allied to *P. everetti* (Rothsch.) from the island of Flores. The female differs from the female of *P. pusilla* in having the throat and middle of the belly *white* as in *P. everetti*.

The male of *P. lepida* appears to differ from the male of *P. everetti* in having the feathers of the forehead superciliary-stripes and cheeks rufous, the upper parts of a richer and more rufescent brown and the flanks but slightly washed with fulvour.

There is a female of this species in the British Museum, collection procured by Mr. L. Wray on Gunong Batu Puteh, 4,300 ft.

Iris, dark brown; bill, dark horn-colour or black in adults, yellowish at the gape and beneath in young; feet, umber-brown.

[The determination of the sex on the specimen marked "f." is doubtful, as it was determined by a native. The specimen agrees in coloration with the other males, which is not usually the case in the species of this genus.

This Wren, which in its habits precisely resembles other members of the family, was rare and exceedingly difficult to get, as it frequented dense brushwood and crept about beneath the interlaced twigs, so that it had to be secured by a snap shot at distance of a few feet, with the chance of blowing the bird to pieces.

Of this species, about the specific identity of which there seems to have hitherto been some doubt, only two specimens have as yet been recorded from the Malay Peninsula—viz., the one mentioned by Dr. Hartert in his paper on the birds collected by Waterstradt on Gunong Tahan; and another from Gunong Batu Puteh in South Perak, collected by Mr. Wray (cf. Sharpe, *P.Z.S.*, 1888, p. 273). The species is not represented either in the Taiping, Kuala Lumpur or Singapore Museums.—H. C. R.]

TIMELIIDÆ.

41. MINLA SOROR, SHARPE.

Minla soror, Sharpe, *P.Z.S.*, 1887, p. 439, pl. xxxviii., fig. 1.

a., b. *m.* et *m.*imm. Gunong Tahan. 4,000 ft. 14th June, 1905. (Nos. 122, 123).

c. *m.* Gunong Tahan (8th Camp). 5,300-6,000 ft. 24th June, 1905. (No. 202).

The immature male differs chiefly from the adult in having the feathers of the crown shorter, darker brown and with the light shaft-streaks much less clearly defined.

Iris, dark brown; bill, horn-colour; feet, brownish.

[Rare on Gunong Tahan, but quite common on some of the Selangor mountains from 3,000-5,000 ft. The habits resemble those of a Tit, and the food consists principally of insects, which are sought for on the branches of small trees. The species associates with such birds as *Pterythius versalatus*, *Cutia cervinocrissa* and *Siva sordidior*, but it is rare to meet more than three or four of the *Minla* in company with one another.—H. C. R.]

42. MESIA ARGENTAUROS, HODGES.

Mesia argentauris, Grant, p. 80.

a.-l' *m.*, *f.* et *m.*, *f.*imm. Gunong Tahan from 5,000 ft. to the summit. June and July, 1905. (Nos. 133, 152, 153, 155, 164, 167, 178, 180, 183, 186-188, 195-197, 226-229, 242, 257-259, 277, 290, 291, 300, 340, 343, 356, 359, 376, 408, 417).

Iris, brown; bill, orange; feet, wax-yellow.

[Quite as common as *Siva malayana*, and frequents similar situations. It is, however, usually found in pairs and not in small flocks, and frequents the branches of shrubs quite close to the ground, while *Siva malayana* is always found on the tops.—H. C. R.]

43. HERPORNIS XANTHOLEUCA, HODGES.

Herpornis xantholeuca, Grant, p. 80.

a.-c. *m.* et imm. Gunong Tahan. 3,300 ft. May and June, 1905. (Nos. 6, 8, 67).

44. SIVA MALAYANA, HARTERT.

Siva strigula malayana, Hartert, *Nov. Zool.*, ix., p. 567 (1902).

a.-z' *m.*, *f.* Gunong Tahan (8th and 9th Camps.) 5,100-7,000 ft. June and July, 1905. (Nos. 56-58, 116-119, 126, 134, 135, 142, 143, 156-160, 166, 171, 172, 179, 185, 203-205, 243, 244, 254-256, 301-304, 314, 321-325, 357, 377, 389, 390, 409, 413, 415, 427).

a". *m.* Gunong Ulu Kali. 4,800-5,800 ft. 30th January, 1906.

Iris, reddish; bill, horn-colour; feet, pale slate-colour.

Though very near to *S. castaneicauda*, this form appears to have the upper parts somewhat greyer. All the specimens before us having

been killed in June and July are in very worn plumage, but I do not think this greyer colour can be entirely accounted for by wear. There is no difference in the colour of the underparts between the present form and *S. castaneicauda*. This is clearly proved by the large series collected by Mr. Robinson. The ear-coverts appear to be of a more blackish-tint in the Malayan bird, while in *S. castaneicauda* they are grey.

This species is new to the British Museum.

[Very common on Gunong Tahan proper, above 5,000 ft., and ranging up to the extreme summit at over 7,000 ft. Indeed, this species, with *Mesia argentauris* and *Suya waterstradti*, probably make up 99 per cent. of the bird-population, above the heavy jungle-zone on the mountain. It flies in parties of six or eight and frequents the open stony slopes of the mountain-side, which are only sparsely clad with heath-like shrubs, which rarely reach 10 ft. in height. It is not common in the gullies, where the vegetation is thicker and taller. Its food appears to consist principally of small insects for which it searches the upper branches of the shrubs, not coming so near the ground as does *Mesia argentauris*.

The large series of nearly fifty specimens differ very little *inter se*, but some specimens have the under surface very much paler in tint than others; nearly all, however, are in very worn plumage and the difference in colour is probably due to the age of the feather and not of the bird, the colours in this family being remarkably sensitive to light.—H. C. R.]

45. SIBIA SIMILLIMA, SALVAD.

Sibia simillima, Grant, p. 81.

a. m. Gunong Ulu Kali. 4,800-5,800 ft. 7th February, 1906.

46. BRACHYPTERYX WRAYI, GRANT.

Brachypteryx nipalensis, Sharpe (*nec Moore*), *P.Z.S.*, 1888, p. 273.

Brachypteryx wrayi, Grant, *Bull.*, *B.O.C.*, xix., No. cxxvii., p. 10 (1906).

Adult male similar to the male of *B. nipalensis*, Moore, but darker slate-colour above.

Total length: ca., 4.3 in.; wing, 2.4 in.; tail, 1.3 in.; tarsus, 1.1 in.

Adult female differs from the female of *B. nipalensis* in having the general colour above very dark reddish-brown, instead of olive-brown; the feathers on the sides of the chest and flanks are also dark brown, instead of clay-brown.

Total length: ca., 4.2 in.; wing, 2.4 in.; tail, 1.4 in.; tarsus, 1.1 in.

a., b. m., f. imm. Gunong Tahan (8th Camp). 5,300-6,000 ft. 22nd June, 1905. (Nos. 181, 182).

c. m. Gunong Tahan (8th Camp). 5,300-6,000 ft. 27th June, 1905. (No. 223).

d. m. " " " 4th July, 1905. (No. 271).

e. m. " " " 9th " (No. 329).

f. m. " (9th Camp). 5,100-7,000 ft. 16th " (No. 382)

In addition to the birds collected by Mr. Robinson there is an adult male in the British Museum, procured by Mr. Wray at Gunong Batu Puteh. I have made this specimen the type of the present species.

[The bird shot on the 4th July, though most certainly a male by dissection, is in the plumage of the adult female. It has the iris brown, bill black, feet brownish, claws pale.

Another specimen, which is changing from the brown plumage of the female to the slate-blue of the adult male, has the iris hazel, bill black, base of lower mandible pinkish, feet lead-colour. Found in parties of two or three in damp gullies among low but thick brushwood

The Nepal-short-wing is confined to the higher mountains of the Malay Peninsula and is decidedly rare. Specimens have been obtained in the Larut Hills near Taiping and at Telôm in the Batang Padang mountains in South Perak, but I have never seen or obtained specimens in Selangor.—H. C. R.]

47. MYIOPHONEUS DICRORHYNCHUS, SALVAD.

Myiophoneus dicrorhynchus, *Sharpe, Cat. Birds, Brit. Mus.*, vii., p. 10 (1883).

Myiophoneus, sp. inc., *Sharpe, P.Z.S.*, 1887, p. 436.

a. m. Batu Caves near Kuala Lumpur. 9th March, 1905.

b. imm. Gunong Tahan. 5,300-6,000 ft. 26th June, 1905. (No. 214).

The immature bird was met with in a narrow mountain stream.

48. MACRONUS PTILOSUS, JARD. AND SELB.

Macronus ptilosus, *Sharpe, P.Z.S.*, 1888, p. 275.

a. m. Gunong Tahan. 3,300 ft. 15th June, 1905. (No. 132).

b. m. Kuala Teku, Tahan River. 500-1,500 ft. 2nd Aug., 1905. (No. 470).

c., d. m., f. Kuala Tembeling, Pahang River. 200 ft. August and September. (Nos. 540, 652).

Iris, brown; orbital ring, silvery; gular, purplish-cobalt; bill, black; feet, grey.

49. CYANODERMA ERYTHROPTERA (BLYTH).

Mixornis erythroptera, *Sharpe, Cat. Birds, Brit. Mus.*, vii., p. 580 (1883).

a. m. Kuala Teku, Tahan River. 500 ft. 1st August, 1905. (No. 464).

b. f. Kuala Tembeling, Pahang River. 200 ft. 5th Sept., 1905. (No. 658).

Iris, chestnut; bill, black, plumbeous at the base; bare skin round eye, cobalt; skin on sides of neck, greenish-cobalt; feet, yellowish horn-colour.

50. STACHYRHIDOPSIS CHRYSÆA (HODGS.).

Stachyrhidopsis chrysæa, *Grant*, p. 81.

a.-g. m., f. Gunong Tahan, from 4,000 ft. to nearly the summit. June and July, 1905. (Nos. 43, 52, 97, 287, 316, 374, 375).

Iris, brown ; bill, bluish, reddish at the base of the lower mandible ; feet, greenish-horn.

[Frequenting low shrubs in open situations and very tame and fearless. These birds seem to me rather dull in colour, duller than others I have seen from the mountains of North Perak, which is perhaps to be accounted for by the fact that they are mostly in worn plumage.—H. C. R.]

Stachyrhidopsis chrysops, Richmond, from Trang, a Native State on the west coast of the Peninsula, about 150 miles north of Penang, requires examination.

51. STACHYRHIS DAVISONI, SHARPE.

Stachyrhis davisoni, *Grant*, p. 82.

a.-c. m., f. Gunong Tahan. 3,300-6,000 ft. June and July, 1905. (Nos. 15, 212, 313).

Iris, brown ; upper mandible, black ; lower, bluish-horn ; feet, greenish-horn ; claws, lead-colour.

52. STACHYRHIS POLIOCEPHALA (TEMM.).

Stachyrhis poliocephala, *Hartert*, *Nov. Zool.*, ix., p. 566 (1902).

a., b. m. Kuala Teku, Tahan River. 500-1,500 ft. 30th July. (Nos. 441, 442).

Iris, light hazel ; bill, plumbeous, paler at the base ; feet, greenish.

53. STACHYRHIS NIGRICOLLIS (TEMM.).

Stachyrhis nigricollis, *Sharpe*, *P.Z.S.*, 1888, p. 275.

a. m. Kuala Tembeling, Pahang River. 200 ft. 5th April. (No. 648).

54. ALCIPPE PERACENSIS, SHARPE.

Alcippe peracensis, *Grant*, p. 82.

a.-p. m., f. et f. imm. Gunong Tahan. 3,300-7,000 ft. May-July, 1905. (Nos. 21, 22, 50, 73, 103, 129, 198, 199, 219, 225, 292, 318, 355, 383, 412).

Iris, dark brown ; bill, plumbeous, paler at tip ; feet, yellowish flesh-colour.

55. ALCIPPE CINEREA, BLYTH.

Alcippe cinerea, *Grant*, p. 82.

a.-c. f. et imm. Kuala Teku, Tahan River. 500-1,500 ft. August, 1905. (Nos. 466, 480, 508).

Iris, dark brown ; bill, horn-colour ; feet, greyish.

56. CORYTHOCICHLA LEUCOSTICTA, SHARPE.

Corythocichla leucosticta, *Sharpe*, *P.Z.S.*, 1887, p. 438.

a.-t. m., f. Gunong Tahan, from 4,000 ft. upwards. June and July, 1905. (Nos. 94, 165, 206, 235, 250, 266, 267, 284, 285, 309, 338, 351, 358, 380, 381, 384, 410, 411, 428).

Iris, red ; bill, corneous or bluish-horn ; feet, brownish flesh-colour, much darker in some specimens.

[A ground bird of very skulking habits, keeping to the thickest undergrowth in the gullies, and generally to be met with in pairs.

This species is widely distributed throughout the higher mountains of the Federated Malay States, from the north of Perak to the south of Selangor, but apparently does not extend further.

The female seems, as a rule, to have the middle of the abdomen and the under tail-coverts rather more rufous than the male, but the difference is not very well marked.—H. C. R.]

57. ANUOPSIS MALACCENSIS (HARTL.).

Anuopsis malaccensis, *Sharpe, Cat. Birds, Brit. Mus.*, vii., p. 588 (1883).

a. f. Kuala Teku, Tahan River. 500 ft. 1st August, 1905. (No. 465).

Iris, hazel; bill, pale plumbeous; feet, pinkish flesh-colour.

58. MALACOPTERUM ALBIGULARE (BLYTH).

Malacopteron albogularis (!), *Hartert, Nov. Zool.*, ix., p. 564 (1902).

a. m. Kuala Teku, Tahan River. 500 ft. 3rd August, 1905. (No. 486).

Iris, hazel; bill, black; feet, dull lead-colour.

59. MALACOPTERUM MAGNIROSTRE (MOORE).

Turdinus magnirostris, *Sharpe, Cat. Birds, Brit. Mus.*, vii., p. 547 (1883).

Malacopteron magnirostre, *Grant*, p. 83.

a., b. f. Kuala Teku, Tahan River. 500 ft. 11th August, 1905. (Nos. 523, 524).

60. DRYMOCATAPHUS NIGRICAPITATUS (EYTON).

Drymocataphus nigricapitatus, *Sharpe, P.Z.S.*, 1888, p. 275.

a. m. Kuala Teku, Tahan River. 500 ft. August, 1905. (No. 510).

b. f. Kuala Tembeling, Pahang River. 200 ft. (No. 644).

61. TURDINUS ABBOTTI (BLYTH).

Turdinus abbotti olivaceum (Strickl.); *Hartert, Nov. Zool.*, ix., p. 562 (1902).

a.-d. m., f. Kuala Tembeling, Pahang River. 200 ft. September, 1905. (Nos. 622, 627, 628, 646).

I cannot agree with Dr. Hartert in regarding the Malayan form of this species (*T. olivaceum*) as separable from typical *T. abbotti*. Among the Malayan birds both richly coloured and pale forms are found, quite irrespective of locality; the former having the underparts quite as rufous as the brightest specimens from Assam, etc. The British Museum possesses a very large series of this bird from all parts of its range.

62. RHINOCICHLA MITRATA (S. MÜLL.).

Rhinocichla mitrata, *Grant*, p. 84.

a. m. Gunong Ulu Kali. 4,800-5,800 ft. 30th January, 1906.

63. POMATORHINUS WRAYI, SHARPE.

Pomatorhinus wrayi, Sharpe, *P.Z.S.*, 1887, p. 437.

a. m. Gunong Tahan (8th Camp). 5,300-6,000 ft. 9th July, 1905. (No. 334).

b. f. „ (9th Camp). 5,100-7,000 ft. 16th July, 1905. (No. 379).

The female (spec. b.) has the grey feathers on the sides of the breast of a darker tint than the male (spec. a.), which latter agrees well in this and in other respects with the type-specimens in the British Museum.

Iris, brown; bill, black, corneous at tip; feet, dull lead-colour, with a tinge of green.

[Seen on low shrubs, amongst thick and tangled undergrowth, at the edges of streams. Widely distributed throughout the higher mountains of the Peninsula, but rare everywhere.—H. C. R.]

64. TROCHALOPTERON PENINSULÆ, SHARPE.

Trochalopteron peninsulæ, Hartert, *Nov. Zool.*, ix., p. 562 (1902).

a.-o. m., f. Gunong Tahan (6th Camp). 5,300-6,000 ft. June and July, 1905.
(Nos. 161, 162, 168, 169, 217, 218, 230, 231, 240, 310, 336, 339, 342).

p., q. f. Gunong Ulu Kali. 4,800-5,800 ft. January and February, 1906.

Iris, yellowish; bill, black; feet, brownish-black, much paler brown in the female.

[In the great central valley of the Gunong Tahan range this bird is very abundant, though it does not descend below about 5,000 ft. It was found usually in pairs, but occasionally in parties of four and five and frequented the low brushwood along the sides of streams and gullies. It was often seen on or near the ground and never at any height in the trees. The note, like that of other members of the genus, is a clear, melodious whistle; but, when alarmed, the bird gives utterance to a very discordant cackle. As regards the distribution of the species in the Peninsula, it is common everywhere in the mountains of the main range as far south as the southern border of Selangor; and it also occurs in the Larut Hills in North Perak, where, however, I am informed that it is very much scarcer.

The series of fourteen birds from Gunong Tahan is astonishingly uniform, and there appears to be no sexual difference. One specimen, which from the character of the plumage appears to be slightly immature, differs from the rest in the absence of the grey occipital patch and in having the feathers of the mantle slightly browner.—H. C. R.]

65. EUPETES MACROCERCUS, TEMM.

Eupetes macrocerus, Hartert, *Nov. Zool.*, ix., p. 561 (1902).

a. m. Gunong Tahan. 3,300 ft. 5th June, 1905. (No. 48).

b. f. Kuala Teku, Tahan River. 500 ft. August, 1905. (No. 511).

Iris, brown; bare skin on sides of neck, silvery blue; bill, black; feet, lead-grey.

PYCNONOTIDÆ.

66. PYCNONOTUS SIMPLEX, LESS.

Pycnonotus simplex, *Grant*, p. 86.

a. adult. Gunong Tahan. 3,300 ft. 4th June, 1905. (No. 38).

Iris, white; bill, dark horn; feet, brownish flesh-colour.

67. RUBIGULA CYANIVENTRIS (BLYTH).

Rubigula cyaniventris, *Hartert*, *Nov. Zool.*, ix., p. 561 (1902).

a.-c. m., f. Gunong Tahan. 3,300 ft. June, 1905. (Nos. 16, 31, 87).

d.-f. m., f. Kuala Teku, Tahan River. 500 ft. July and August, 1905. (Nos. 440, 489, 490).

Iris, dark brown; bill, black; tarsi, bluish lead-colour.

[A submontane bird, ranging up to 3,000 ft., but commoner at lower elevations; usually found in pairs in the tops of small trees in thick jungle.—H. C. R.]

68. RUBIGULA WEBBERI (HUME).

Rubigula webberi, *Hartert*, *Nov. Zool.*, ix., p. 561 (1902).

a. f. Gunong Tahan. 3,300 ft. 5th June, 1905.

Iris, hazel; bill and feet, black.

The type-specimen, which was procured at Tonka in the Malay Peninsula, has the outer pair of tail-feathers largely white, only the basal five-sixths of the outer web and the basal third of the inner web being black; the penultimate pair have the terminal half of the inner web white. Other examples from the Malay Peninsula have less white on the outer tail-feathers than the type-specimen, but the amount of white appears to vary in different individuals; the bird collected on Gunong Tahan having very little white and approaching *R. squamata* (Temm.) from Java in this respect.

69. TRICHOLESTES CRINIGER (BLYTH).

Tricholestes criniger, *Grant*, p. 86.

a. m. Gunong Tahan. 3,300 ft. 10th June, 1905. (No. 79).

b. m. Kuala Teku, Tahan River. 500 ft. 10th August, 1905. (No. 517).

70. CRINIGER OCHRACEUS, MOORE.

Criniger ochraceus, *Hartert*, *Nov. Zool.*, ix., p. 559 (1902); *Grant*, p. 87.

a., b. m. Gunong Tahan. 3,300 ft. June, 1905. (Nos. 27, 68).

Iris, red; bill, bluish; feet, flesh-coloured.

71. CRINIGER TEPHROGENYS (JARD. AND SELB.).

Criniger tephrogenys, *Grant*, p. 86.

a. f. Kuala Teku, Tahan River. 500 ft. August, 1905. (No. 568).

The browner, longer-tailed species, *C. ochraceus*, is an upland form and very rarely occurs below 3,000 ft., while the shorter-tailed yellower form, *C. tephrogenys*, does not ascend above that limit. The species, so far as my experience goes, are never found together, and their habits are quite different; the lowland form being found in much thicker jungle and being a much more retiring species than the mountain bird. It is also very much rarer.

72. CRINIGER PHÆOCEPHALUS (HARTL.).

Alophoixus phæocephalus, *Hartert, Rev. Zool.*, ix., p. 560 (1902).

a., b. f. Kuala Tembeling, Pahang. 200 ft. August and September, 1905. (No. 638).

73. MICROPUS MELANOLEUCUS (EYTON).

Micropus melanoleucus, *Sharpe, Cat. Birds, Brit. Mus.*, vi., p. 69 (1881).

a., b. m., f. Gunong Tahan. 3,300-6,000 ft. June, 1905. (Nos. 13, 216).

Iris, dark hazel; bill and feet, black.

74. PINAROCICHLA EUPTILOSA, JARD. AND SELB.

Pinarocichla euptilosa, *Sharpe, Cat. Birds, Brit. Mus.*, vi., p. 62 (1881).

a. m. Kuala Tembeling, Pahang River. 200 ft. 27th August, 1905. (No. 602).

Iris, red; bill and feet, black.

75. IOLE OLIVACEA, BLYTH.

Iole olivacea, *Grant*, p. 87.

a., b. ad. Kuala Teku, Tahan River. 500 ft. July and August, 1905. (Nos. 478, 522).

Iris, white; bill, horn-colour; feet, brownish flesh-colour.

76. IOLE PERACENSIS, HARTERT AND BUTLER.

Iole peracensis, *Grant*, p. 87.

a.-q. m., f. Gunong Tahan. 3,300-7,000 ft. June and July, 1905. (Nos. 24, 32, 163, 220, 241, 248, 249, 297, 337, 346, 349, 399, 407, 425, 433).

Iris, red; bill, horn-colour; upper mandible, darker; feet, dull brown, with a tinge of flesh-colour; soles, yellow.

77. HEMIXUS CINEREUS (BLYTH).

Hemixus cinereus, *Grant*, p. 88.

a.-d. m., f. Gunong Tahan (6th Camp). 3,000-3,300 ft. June-August, 1905. (Nos. 72, 80, 111, 525).

Iris, chestnut; bill and feet, black.

78. HEMIXUS MALACCENSIS, BLYTH.

Hemixus malaccensis, *Grant*, p. 88.

a.-c. *m.*, *f.* et *f. imm.* Gunong Tahan. 3,300 ft. June, 1905. (Nos. 28, 42, 44, 71, 128).

Adult.—Iris, chestnut; bill and feet, horn-colour.

Immature.—Iris, hazel; bill and feet, black.

79. IRENA CYANEA, BEGGIE.

Irena cyanea, *Grant*, p. 88.

a.-d. *f.* et *m. imm.* Gunong Tahan. 3,300 ft. June, 1905. (Nos. 66, 70, 112, 113).

e., *f. f.* Kuala Tembeling, Pahang River. 200 ft. August, 1905. (Nos. 556, 621).

Iris, red; bill and feet, black.

80. CHLOROPSIS ZOSTEROPS, VIG.

Chloropsis zosterops, *Grant*, p. 89.

a.-c. *m.*, *f.* Gunong Tahan. 3,300 ft. June, 1905. (Nos. 77, 86, 93).

d. *m.* Kuala Teku, Tahan River. 1,000 ft. 2nd August, 1905. (No. 482).

e., *f. m.*, *f.* Kuala Tembeling, Pahang River. 200 ft. 31st August, 1905. (Nos. 623, 624).

Iris, brown; bill, black; feet, greenish lead-colour.

81. CHLOROPSIS ICTEROCEPHALA (LESS.).

Chloropsis icterocephala, *Grant*, p. 89.

a., b. *m.*, *f.* Gunong Tahan. 3,300 ft. June, 1905. (Nos. 26, 88).

c.-e. *m.*, *f.* Kuala Teku, Tahan River. 500-1,500 ft. August, 1905. (Nos. 462, 473, 519).

Iris, dark brown; bill, lead-colour; feet, greenish.

82. CHLOROPSIS CYANOPOGON (TEMM.).

Chloropsis cyanopogon, *Grant*, p. 88.

a. *f.* Kuala Tembeling, Pahang River. 200 ft. 2nd September, 1905. (No. 639).

83. ÆGITHINA VIRIDISSIMA (BR.).

a. *f.* Kuala Teku, Tahan River. 500-1,000 ft. 2nd August, 1905. (No. 471).

Iris, reddish-hazel; bill, pale-horn; culmen, darker; feet, bluish lead-colour.

[Usually found in the immediate vicinity of villages and not in deep jungle far from human habitations, as was the case with this specimen.—H. C. R.]

CAMPOPHAGIDÆ.

84. PERICROCOTUS MONTANUS, SALVAD.

Pericrocotus montanus, Grant, p. 91.

Pericrocotus croceus, Sharpe, *P.Z.S.*, 1888, p. 269; Grant, p. 91.

a.-k. m., f. et f. imm. Gunong Tahan. 3,800-7,000 ft. June and July, 1905.
(Nos. 130, 263, 274, 295, 311, 319, 332, 369-371).

l.-t. m., f. Semangko Pass, Selangor-Pahang Border. February, May and November, 1902-1904.

u.-w. m., f. Gunong Ulu Kali. 4,800-5,800 ft. February, 1906.

x., y. m., f. Telôm, Perak-Pahang Border. September, 1904.

Iris, chestnut or dark brown; bill and feet, black.

After a careful examination of the large series of *Pericrocoti* forwarded by Mr. Robinson, I am convinced that the type of *P. croceus* is a mere colour variety of *P. montanus*, and that the females with the top of the head and back dull glossy black and the rump and upper tail-coverts bright yellow, which I had regarded as belonging to *P. croceus*, are in reality merely fully adult females of *P. montanus*.

Among the birds collected on Gunong Tahan, a male and female (Nos. 369 and 370) are marked as a pair by Mr. Robinson. The male is in fully adult plumage, but the female is obviously not a very old bird as is shown by some of the feathers of the crown, which are narrowly edged with whitish-buff. This bird has the plumage of the head and back grey, and the rump and upper tail-coverts dull olive-yellow. It, therefore, follows that, unless some mistake has been made, the female sometime breeds in this grey plumage and that possibly the glossy black crown and mantle are not assumed until the second year.

No. 295, a female by dissection, is in partial male plumage, the rump, breast and belly being orange-red. Mr. Robinson, as will be seen from the following note, evidently shares my opinion as regards *P. croceus*:

[Common on Gunong Tahan from a limit of about 3,500 ft. up to 6,000 ft., and generally found in pairs.

I cannot understand the *Pericrocoti* of the *P. montanus* section and their relation to *P. croceus* (Sharpe), if that species has any real existence, which I am very much inclined to doubt. Some females of the series seem to agree with the bird assigned to *P. croceus* in having the yellow colour of the rump much stronger and the head more glossy black, but I am inclined to think that these are really the very adult females of *P. montanus*. I send you my whole available series to help to clear up the point. It is noteworthy that of the very many specimens of the species that have passed through my hands I have never seen a specimen agreeing with the male type of *P. croceus*. There is no possible doubt about the sex of No. 295.—H. C. R.]

85. *GRAUCALUS LARUTENSIS* (SHARPE).

Artandes larutensis, Sharpe, *P.Z.S.*, 1887, p. 435.

Graucalus larutensis, Hartert, *Nov. Zool.*, ix., p. 554 (1902); Robinson, *Fasc. Malayenses, Zool.*, pt. iii., *Birds*, p. 90 (1905).

a.-c. m., f. Gunong Tahan (6th Camp). 3,300 ft. May and June, 1905. (Nos. 5, 30, 37).

d. m. Gunong Mengkuang Lebah, Selangor. 5,200 ft. 5th April, 1905.

c. f. Semangko Pass, Selangor-Pahang Border. 2,700 ft. 25th Feb., 1904.

Iris, red, reddish-brown or brownish-grey; bill and feet, black.

[Fairly common, singly or in pairs, about an altitude of 3,000 ft., but not higher, and keeps to the tops of the taller trees. Widely distributed over all the higher mountains of the central section of the Malay Peninsula.—H. C. R.]

86. *GRAUCALUS SUMATRENSIS* (S. MÜLL.).

Graucalus sumatrensis, Grant, p. 90.

a., b. m., f. Kuala Tembeling, Pahang River. 200 ft. 9th August, 1905. (Nos. 542, 543).

Iris, white; bill and feet, black.

[From a flock of five or six met with in a coconut grove.—H. C. R.]

MUSCICAPIDÆ.

87. *RHINOMYIAS PECTORALIS* (SALVAD.).

Rhinomyias pectoralis, Hartert, *Nov. Zool.*, ix., p. 553 (1902).

a. m. Gunong Tahan. 3,300 ft. 13th June, 1905. (No. 106).

b., c. Kuala Teku, Tahan River. 500-1,500 ft. July and August, 1905. (Nos. 457, 484).

Iris, brown; bill, black; feet, pinkish.

88. *CULICICAPA CEYLONENSIS* (SWAINS.).

Culicicapa ceylonensis, Grant, p. 91.

a. m. Kuala Teku, Tahan River. 500 ft. 4th August, 1905. (No. 492).

Iris, dark brown; bill, black; feet, yellowish-orange.

89. *CRYPTOLOPHA DAVISONI*, SHARPE.

Cryptolopha davisoni, Sharpe, *P.Z.S.*, 1888, p. 271.

a.-c. m. et m. imm. Gunong Tahan (8th Camp). 5,300-6,000 ft. 21st June and 7th July. (Nos. 176, 177, 305).

Iris, dark or hazel; bill, dark above, orange at the base and at the tip; feet, dull greenish-yellow.

This species was described from a single example procured by Mr. L. Wray in the mountains of South Perak at an elevation of 4,200 ft. No specimens are available for comparison in local Museums. All three birds are in moult.

[In habits precisely similar to *C. trivirgata*, but very much rarer.—H. C. R.]

90. CRYPTOLOPHA TRIVIRGATA (STRICKL.).

a.-r. m., f. et m., f. imm. Gunong Tahan. 4,000-4,500 ft. June and July, 1905. (Nos. 95, 96, 120, 136, 137, 211, 221, 238, 288, 353, 362, 363, 405, 406, 422-424).

Adult.—Iris, hazel; bill, horn-colour, yellowish at the tip; feet, French-grey.

Immature.—Iris, umber; bill, lead-colour, yellowish at the tip; feet, French-grey.

Younger specimens differ from the adults in having the under surface dull greyish-green and the stripes on the crown far less clearly defined and whiter.

[This friendly little bird was very common on Gunong Tahan, frequenting the patches of low bush near the streams and also the faces of the cliffs. It was very tame and fearless and would often come within a couple of feet while one was sitting waiting for other birds. The note is a single chirp and is often repeated.

Elsewhere in the Peninsula this species is decidedly rare, and I have only met with it on one other occasion on the summit of Gunong Mengkuang Lebah, Selangor, 5,400 ft., where I secured two specimens.—H. C. R.]

91. PHILENTOMA VELATUM (TEMM.).

Philentoma velatum, *Grant*, p. 92.

a., b. m., f. Gunong Tahan. 3,300 ft. June, 1905. (Nos. 34, 39).

c. m. Kuala Teku, Tahan River. 500-1,500 ft. 1st August, 1905. (No. 463).

d. f. Kuala Tembeling, Pahang River. 200 ft. 24th August, 1905. (No. 584).

Iris, red; bill and feet, black.

92. PHILENTOMA PYRRHOPTERUM (TEMM.).

Philentoma pyrrhopterum, *Grant*, p. 92.

a.-c. m., f. Kuala Teku, Tahan River. 500-1,000 ft. July and August, 1905. (Nos. 450, 474, 507).

d. f. Kuala Tembeling, Pahang River. 200 ft. 30th August, 1905. (No. 614).

Iris, chestnut; bill, black; feet, greenish-grey.

93. RHIPIDURA PERLATA, S. MÜLL.

Rhipidura perlata, *Hartert*, *Nov. Zool.*, ix., p. 552 (1902).

a., b. m. Kuala Teku, Tahan River. 500 ft. 31st July and 2nd August, 1905. (Nos. 455, 479).

Iris, dark brown; bill and feet, black.

[Inhabits dense, low country jungle, keeping to the smaller trees and bushes.—H. C. R.]

94. RHIPIDURA ALBICOLLIS (VIEILL.).

Rhipidura albicollis, *Grant*, p. 92.

a.-l. *m.*, *f.* et *f. imm.* Gunong Tahan, above 5,000-7,000 ft. June and July, 1905. (Nos. 175, 207, 208, 252, 275, 276, 330, 331, 347, 361, 426).

Iris, brown; bill, black, pinkish beneath; feet, dark grey.

[Keeping to the thick scrub in the gullies.—H. C. R.]

95. TERPSIPHONE AFFINIS, BLYTH.

Terpsiphone affinis, *Grant*, p. 93.

a. adult. Gunong Tahan. 3,000 ft. 15th June, 1905. (No. 535).

96. HYPOTHYMIS AZUREA (BODD.).

Hypothymis azurea, *Grant*, p. 94.

a., b. *m.* Kuala Teku, Tahan River. 500-1,000 ft. July and August, 1905. (Nos. 447, 513).

c. *f.* Gunong Tahan. 3,300 ft. 1st June, 1905. (No. 18).

Female.—Iris, hazel; bill, black with bluish-sheen; inside of the mouth, yellowish-green; feet, bright bluish lead-colour.

97. CYORNIS CONCRETA (S. MÜLL.).

Cyornis concretus, *Hartert*, *Nov. Zool.*, ix., p. 549 (1902).

a. *m. imm.* Kuala Teku, Tahan River. 500-1,500 ft. 1st August, 1905. (No. 460).

Iris, brown; bill, black; feet, dull flesh-colour.

98. DIGENEA MALAYANA, SHARPE.

Digenea malayana, *Sharpe*, *P.Z.S.*, 1888, p. 247.

Anthipes malayana, *Sharpe*, *P.Z.S.*, 1888, pp. 247 and 272.

a., b. *m.*, *f.* Gunong Tahan. 5,000 ft. 11th June, 1905. (Nos. 124, 125).

c. *f.* Telôm, Perak-Pahang Frontier. 3,500 ft. 22nd September, 1904.

d. *m.* Gunong Mengkuang Lebah, Selangor. 5,200 ft. 6th April, 1905.

Iris, rich-brown; bill, horn; feet, pale purplish-flesh.

This species is quite distinct from *D. moniliger*. An additional character to those already given by Dr. Sharpe will be found in the extremely narrow black edging about 0.05 in. wide and confined to the white throat; in *D. moniliger* the black band round the throat is much wider about 0.1 in. and continued up the sides of the throat.

[This Fly-catcher is only found in the darkest and gloomiest jungle, generally in narrow gullies where it keeps to low bushes.—H. C. R.]

99. NILTAVA DECIPIENS, SALVAD.

Niltava decipiens, *Grant*, p. 94.

a., b. *m.*, *f. imm.* Gunong Tahan. 5,000-7,000 ft. June and July, 1905 (Nos. 224, 360).

100. MUSCICAPULA WESTERMANNI, SHARPE.

Muscicapula melanoleuca westermanni, *Hartert, Nov. Zool.*, ix., p. 551 (1902).

a.-f. m., f. et m. imm. Gunong Tahan. 4,000-7,000 ft. June. (Nos. 20, 110, 139, 146, 302, 391).

Iris, dark brown; bill, black; feet, blackish-brown.

101. MUSCICAPULA MALAYANA, GRANT.

Muscicapula hyperythra, *Sharpe (nec Blyth), P.Z.S.*, 1888, p. 270; *Hartert, Nov. Zool.*, ix., p. 552 (1902).

Muscicapula malayana, *Grant, Bull., B.O.C.*, xix., No. cxxvii., p. 10 (1906).

Adult male.—Resembles the male of *M. hyperythra* (Blyth), but the upper parts are dark grey instead of slate grey.

Total length: ca., 4.2 in.; wing, 2.25 in.; tail, 1.6 in.; tarsus, 0.7 in.

Adult female.—Upper part much darker and greyer than in *M. hyperythra* and closely resembling those of *M. pallidipectus* (Hartert) from Batchian. It may, however, be at once distinguished from the latter by the much deeper colour of the underparts, the throat being rufescent and the sides of the belly and flanks mostly dark olive-brown.

Total length: ca., 4.0 in.; wing, 2.25 in.; tail, 1.6 in.; tarsus, 0.7 in.

a., b. m., f. Gunong Tahan. 4,000-4,500 ft. 12th June, 1905. (Nos. 98, 101). (Types of subspecies).

c.-q. m., f. et m., f. imm. Gunong Tahan. 4,000-6,000 ft. June and July, 1905. (Nos. 184, 189, 200, 232, 253, 259, 283, 307, 312, 327, 329, 354).

EURYLÆMIDÆ.

102. CALYPTOMENA VIRIDIS, RAFFL.

Calyptomena viridis, *Grant*, p. 96.

a.-c. m., f. Kuala Teku, Tahan River. 500-1,000 ft. August, 1905. (Nos. 469, 491, 499, 500, 504).

f., g. f. Kuala Tembeling, Pahang River. 200 ft. August, 1905. (Nos. 565, 576).

Iris, hazel; bill, greenish-horn, yellowish on the tomia and at the gape; feet, greenish.

[Common everywhere in secondary jungle and among low trees and shrubs in old forest.—H. C. R.]

103. PSARISOMUS DALHOUSIÆ (JAMESON).

Psarisomus dalhousiæ, *Slater, Cat. Birds, Brit. Mus.*, xiv., p. 458 (1888).

a. f. Kuala Teku, Tahan River. 500-1,000 ft. August, 1905. (No. 566).

[The Long-tailed Broad-bill is a rare bird in the Malay Peninsula and has only been obtained from two localities besides the present: one

being the Larut Hills in Perak at an elevation of from 3,000-5,000 ft.; and the second the Semangko Pass in Selangor from 2,700-4,000 ft. In the latter locality it is fairly common.

I have never seen the bird alive myself and know nothing of its habits.—H. C. R.]

104. EURYLÆMUS OCHROMELAS, RAFFL.

Eurylæmus ochromelas, *Grant*, p. 96.

a. f. (with nest). Kuala Teku, Tahan River. 500 ft. 25th May, 1905.

b., c. m.ad. et m.imm. Kuala Teku, Tahan River. 500-1,000 ft. 8th August, 1905.

[Iris, greenish; bill, pale blue; tomia, yellow; feet, pinkish flesh-colour. The nest of this species is very similar to that of *E. javanicus*, but smaller. In the present instance, it was suspended immediately beneath a leafy branch about 25 ft. above the river. It contained two nearly hatched eggs. The habits of this species are similar to those of *E. javanicus*, but it is often found in more open country.—H. C. R.]

The nest of this species is very similar to that of *Corydon sumatranus* (cf. *Grant*, p. 97).

105. EURYLÆMUS JAVANICUS, HORSE.

Eurylæmus javanicus, *Hartert*, *Nov. Zool.*, ix., p. 548 (1902).

a. f. Kuala Teku, Tahan River. 500-1,000 ft. 20th July, 1905. (No. 444).

Iris, emerald-green; bill, pale blue, tomia green; feet, pinkish flesh-colour.

106. CYMBORHYNCHUS MACRORHYNCHUS, (GM.).

Cymborhynchus macrorhynchus, *Grant*, p. 96.

a.-e. m., f. Kuala Tembeling, Pahang River. 200 ft. August, 1905. (Nos. 560, 561, 573, 574, 588).

Iris, emerald; bill, pale blue; tomia and tip, chrome; feet, purplish-blue.

[The Black and Red Broad-bill is found all along the rivers in secondary growths and around towns, but does not penetrate far into virgin jungle. Its large, untidy, globular nests are built at the ends of branches, never more than 10 or 15 ft. from the ground, and like those of the rest of the family are usually overhanging water. The note is best expressed by the syllables *che-ri-ri-r*, but the rolling sound at the end is often much prolonged and is sometimes varied by a clear whistle.—H. C. R.]

107. CORYDON SUMATRANUS (RAFFL.).

Corydon sumatranus, *Grant*, p. 97.

a. f. Gunong Tahan (6th Camp). 3,300 ft. 2nd June, 1905. (No. 29).

b. m. Kuala Teku, Tahan River. 500 ft. 29th July, 1905. (No. 445).

Male.—Iris, brown; orbital skin, pinkish-red; bill, pink; feet, dark maroon.

Female.—Iris, whitish; bill and skin round eye, reddish-pink; feet, blackish.

[This species inhabits the same type of country as *E. javanicus*, but ranges further up the hills. The specimen from Kuala Teku was one of a flock of six or seven which visited the vicinity of our camp late one evening at twilight. I cannot say, like Davison (*Stray Feathers*, vi., p. 97), that I found them sluggish; indeed, they were actively searching the branches of a tall tree for insects. The note was a somewhat harsh whistle, which degenerated into a grating squawk when the bird was alarmed.

The nest, which I obtained in Pahang at an elevation of about 1,500 ft., has already been described (cf. Grant, p. 97).—H. C. R.]

PICIDÆ.

108. SASIA ABNORMIS (TEMM.).

Sasia abnormis, Grant, p. 27.

a. 1 f. Gunong Tahan (6th Camp). 3,300 ft. 31st May, 1905. (No. 11).

Iris, carmine; orbital skin, crushed strawberry-colour; upper mandible, black; lower, pale-yellow; feet, gamboge-yellow; claws, dusky-yellow.

109. PYRRHOPICUS PORPHYROMELAS (BOIE.).

Lepocestes porphyromelas, Hargitt, *Cat. Birds, Brit. Mus.*, xviii., p. 382 (1890).

a. f. Kuala Tembeling, Pahang River. 200 ft. 5th September, 1905. (No. 661).

110. MIGLYPTES TUKKI (LESS.).

Miglyptes tukki, Grant, p. 98.

a.-c. m., f. et m. imm. Gunong Tahan (6th Camp). 3,300 ft. June, 1905. (Nos. 90, 113, 114).

d.-f. m., f. Kuala Teku, Tahan River. 500-1,000 ft. July and August, 1905. (Nos. 454, 495, 496).

Male.—Iris, hazel; bill, dark lead-colour, paler beneath; feet, dull brown.

Immature male.—Iris, brown; bill, dark horn-colour with a pinkish tinge; feet, pinkish-brown.

Female.—Iris, greyish-brown; upper mandible, black; lower, bluish horn-colour, yellow at tip; feet, dark brownish.

111. MIGLYPTES GRAMMITHORAX (MALH.).

Miglyptes grammithorax, Grant, p. 98.

a., b. m., f. Kuala Teku, Tahan River. 500-1,000 ft. August, 1905. (Nos. 477, 521).

Iris, chestnut; bill, black; feet, brownish-green.

112. *CHRYSOCOLAPTES VALIDUS* (TEMML.).

Chrysocolaptes validus, *Grant*, p. 99.

a. f. Gunong Tahan (6th Camp). 3,300 ft. 11th June, 1905.

Iris, red; bill, horn-colour, yellowish beneath; feet, brown.

[Fairly common in old jungle, ascending the hills to about the limit indicated above, though much scarcer at the higher elevations.—H. C. R.]

113. *MICROPTERNUS BRACHYURUS* (VIEILL.).

Micropternus brachyurus, *Grant*, p. 99.

a. f. Kuala Teku, Tahan River. 500-1,000 ft. 6th August, 1905. (No. 501).

b. f. imm. Kuala Tembeling, Pahang River. 200 ft. 4th September, 1905. (No. 653).

[Common everywhere in low country, but more abundant in the neighbourhood of villages and secondary growth. Feeds mainly on tree termites and makes its nesting-burrows in their large globular nests.—H. C. R.]

114. *GAUROPICOIDES RAFFLESII* (VIG.).

Gauropicoides rafflesii, *Grant*, p. 100.

a. m. imm. Gunong Tahan (6th Camp). 3,300 ft. 8th June, 1905. (No. 62).

Iris, brown; bill, black, blue at the base; feet, brownish.

[A very rare and local species in the central portions of the Peninsula, becoming commoner in the more southern districts. Only found in the big jungles far from cultivation.—H. C. R.]

115. *CHRYSOPHLEGMA MALACCENSE* (LATH.).

Chrysophlegma malaccense, *Grant*, p. 100.

a. f. Kuala Teku, Tahan River. 500-1,000 ft. 7th August, 1905. (No. 567).

[This Woodpecker has a wider range in altitude than most of the Malayan species. It is found in all types of country as high as 4,000 ft., though rarer at the higher elevations.—H. C. R.]

116. *CHRYSOPHLEGMA HUMEI*, HARGITT.

Chrysophlegma humei, *Grant*, p. 100.

a., b. m., f. Gunong Tahan (6th Camp). 3,000 ft. 15th June, 1905. (Nos. 531, 532)

c., d. m., f. Kuala Teku, Tahan River. 500-1,500 ft. July, 1905. (Nos. 439, 446).

Iris, chestnut; bill, lead-colour; feet, greenish.

[This species does not extend much above 3,000 ft; beyond this altitude, in Perak and Selangor at any rate, it is replaced by *C. wrayi*, which does not occur on Gunong Tahan.—H. C. R.]

117. *GECINUS PUNICEUS* (HORSF.).

Gecinus puniceus, *Grant*, p. 101.

a. m. Gunong Tahan (6th Camp). 3,300 ft. 15th June, 1905. (No. 533).

118. GECINUS ROBINSONI, GRANT.

(Plate II.)

Gecinus robinsoni, *Grant, Bull., B.O.C.*, xix., No. cxxvii., p. 10 (1906).

Adult male.—Like the male of *G. occipitalis* (Vig.), but, with the general colour, very much darker; the crown nearly uniform, black like the nape, scarcely showing any trace of grey on the sides of the feathers; the back and underparts dark olive-green, instead of olive; and the tail-feathers black with very faintly indicated greenish-grey bands on the edges of the middle pair of rectrices.

Iris, reddish-chestnut; bill, black; feet, greenish lead-colour.

Total length: ca., 11.5 in.; culmen, 1.85 in.; wing, 5.5 in.; tail, 3.8 in.; tarsus, 1.15 in.

Adult female.—Differs from the male in having the entire forehead black like the crown.

Iris, brown; bill, black; feet, greenish lead-colour.

Total length: ca., 11.5 in.; culmen, 1.75 in.; wing, 5.35 in.; tail, 4.0 in.; tarsus, 1.15 in.

a, b. m., f. Gunong Tahan (8th Camp). 5,300-6,000 ft. 9th July. (Nos. 293, 294). (Types of the species).

[The discovery of a Woodpecker on the plateau of Gunong Tahan was most unexpected, seeing that there are no large trees or thick jungle. The pair obtained, which were shot by one of my Dyaks on a tall *Pandanus*, were probably stragglers from some of the lower and more thickly wooded slopes on the Kelantan side, which I was unable to reach. No other specimens were seen, though we all searched for the bird diligently.—H. C. R.]

118A. GECINUS RODGERI, HARTERT AND BUTLER.

Gecinus chlorolophus, *Hargitt, Cat. Birds, Brit. Mus.*, xviii., pp. 60 and 62 [part. specimen, v''' Mountains of Perak] (1890).

Gecinus rodgeri, *Hartert and Butler, Nov. Zool.*, v., p. 508 (1898); *Butler, Journ. Straits Branch Roy. Asiat. Soc.*, No. 32., p. 23 (1899).

[Though not collected during the present expedition, I may mention that the Selangor Museum possesses four examples of this rare Woodpecker from the hills on the Pahang boundary between 2,700 ft. and 4,000 ft.

As far as I can ascertain, the species is only known from two other skins, the type in the Tring Museum and the specimen in the British Museum, listed as *Gecinus chlorolophus* (specimen, v''') by the late Mr. Hargitt (cf.), who did not regard it as specifically distinct.—H. C. R.]

CAPITONIDÆ.

119. MESOBUCCO DUVAUCELI (LESS.).

Mesobucco duvauceli, *Grant*, p. 102.

a. f. Kuala Tembeling, Pahang River. 200 ft. 31st August, 1905. (No. 618).



120. CYANOPS RAMSAYI (WALDEN).

Cyanops franklini ramsayi, *Hartert, Nov. Zool.*, ix., p. 549 (1902).

a. *m. imm.* Gunong Tahan (6th Camp). 3,300 ft. 12th June, 1905. (No. 105).

b., c. 2 *f.* Gunong Tahan (8th Camp). 5,300-6,000 ft. July, 1905. (Nos. 303, 333).

d., e. Gunong Ulu Kali. 4,800-5,800 ft. 29th and 30th January.

Iris, olive-brown ; bill, bluish-horn ; feet, greenish.

[The Barbets of this genus are most exasperating birds to hunt for. In habits they are very sluggish and will sit for hours motionless on a branch, usually near the main trunk. On the lower slopes of Gunong Tahan their note *tuk-tukk, tuk, tuk* was perpetually heard, one bird answering the other, but, as shown above, we got very few specimens.—H. C. R.]

121. CYANOPS OORTI (S. MÜLL).

Cyanops oorti, *Hartert, Nov. Zool.*, ix., p. 546 (1902).

a. *m.* Gunong Tahan (6th Camp). 3,300 ft. 29th May, 1905. (No. 4).

Iris, brown ; bill, lead-colour ; feet, greenish lead-colour.

122. CHOTORHEA CHRYSOPOGON (TEMME).

Chotorhea chrysopogon, *Grant*, p. 103.

a. *m.* Kuala Tembeling, Pahang River. 200 ft. 31st August, 1905. (No. 619).

123. CALORHAMPHUS HAYI (J. E. GRAY).

Calorhamphus hayi, *Hartert, Nov. Zool.*, ix., p. 546 (1902).

a. *adult.* Gunong Tahan (6th Camp). 3,000 ft. 15th June, 1905. (No. 530).

b. *m.* Kuala Teku, Tahan River. 500-1,000 ft. 10th August, 1905. (No. 516).

c. *f.* Kuala Tembeling, Pahang River. 200 ft. 4th September, 1905. (No. 643).

124. PSILOPOGON PYROLOPHUS (S. MÜLL).

Psilopogon pyrolophus, *Grant*, p. 101.

a. *m.* Gunong Ulu Kali. 4,800-5,800 ft. February, 1906.

CUCULIDÆ.

125. RHODYTES SUMATRANUS (RAFFL.).

Rhodytes sumatranus, *Hartert, Nov. Zool.*, ix., p. 545 (1902).

a. *m.* Gunong Tahan (6th Camp). 3,300 ft. 30th May, 1905. (No. 7).

b., c. *m., f.* Kuala Teku, Tahan River. 500-1,000 ft. July and August, 1905. (Nos. 448, 502).

Iris, blue, inner ring, white ; orbital skin, dark orange ; posterior portion, crimson ; bill, sea-green ; feet, lead-colour ; soles, yellow.

[Unlike other species of the genus, this bird is only found in old jungle, usually in hilly country.—H. C. R.]

126. RHOPODYTES DIARDI (LESS.).

Rhopodytes diardi, *Grant*, p. 103.

a. m. Kuala Tembeling, Pahang River. 200 ft. 23rd August, 1905. (No. 580).

127. UROCOCCYX ERYTHROGNATHUS (HARTL.).

Urococcyx erythrognaethus, *Grant*, p. 104.

a., b. m. Kuala Teku, Tahan River. 500-1,000 ft. July, 1905. (Nos. 437, 452).

c., d. f. Kuala Tembeling, Pahang River. 200 ft. August, 1905. (Nos. 546, 586).

Iris, white; orbital skin, crimson-orange; bill, pale sea-green, crimson at the base of the lower mandible; feet, greenish-lead.

The iris of this bird varies much in colour, being either white, yellow, orange or dull brown.

128. RHINORTHA CHLOROPHÆA (RAEFFL.).

Rhinortha chlorophæa, *Grant*, p. 104.

a., b. m. Kuala Teku, Tahan River. 500-1,000 ft. August, 1905. (Nos. 503, 520).

c.-e. m. et f. Kuala Tembeling, Pahang River. 200 ft. August, 1905. (Nos. 547, 554, 597).

Male.—Iris, brown; bill, sea-green; orbital space, silvery greenish; feet, slate-colour.

[I have nothing to add to Davison's notes on the habits of this species, except that in the Malay Peninsula it is far commoner in scrubby jungle near villages than in virgin forest.—H. C. R.]

129. ZANCLOSTOMUS JAVANICUS (HORSF.).

Zanclostomus javanicus, *Grant*, p. 104.

a., b. m., f. Gunong Tahan (6th Camp). 3,300 ft. June, 1905. (Nos. 61, 64).

c. f. Kuala Teku, Tahan River. 500-1,500 ft. 28th July, 1905. (No. 432).

Iris, white; bill, red; feet, greenish lead-colour.

130. CENTROPUS RECTUNGUIS, STRICKL.

Centropus rectunguis, *Shelley, Cat. Birds, Brit. Mus.*, xix., p. 343 (1891).

a. m. Kuala Tembeling, Pahang River. 200 ft. 19th August, 1905. (No. 530).

Iris, red; bill and feet, black.

This specimen has not completed its moult and the wings and tail are not full grown.

[The habits of all the species of Crow-Pheasant are practically identical. They frequent the outskirts of villages, low scrub and stretches of lalang grass, being specially abundant along the railways.—H. C. R.]

131. *SURNICULUS LUGUBRIS* (HORSF.).

Surniculus lugubris, *Grant*, p. 106.

a.-d. m. et m., f. imm. Kuala Tembeling, Pahang River. 200 ft. August 1905. (Nos. 552, 586, 587, 596).

Iris, dark brown; skin beneath the eye, dull greenish; gape, orange; bill and feet, black.

Three of the four specimens are quite immature, the feathers of the crown, mantle, wing-coverts and undersurface having large subterminal spots of white and with the white nuchal spot more marked than in the adult.

[The species frequents low secondary jungle.—H. C. R.]

132. *HIEROCOCCYX FUGAX* (HORSF.).

Hierococcyx fugax, *Shelley*, *Cat. Birds, Brit. Mus.*, xix., p. 236 (1891).

a. f. Kuala Tembeling, Pahang River. 200 ft. 19th August, 1905. (No. 537).

Iris, orange; gape, lower mandible, tip of upper mandible and orbital skin, chrome; middle part of upper mandible, black; tarsi, rich chrome.

[The note of this bird, which may be rendered by the syllables *ka-ka-kakaka*, puzzled me for a long time; they were only heard just before and for a short time after dusk and the natives insisted that they were uttered by a hawk evidently confusing the bird with the *Lang sewa* (*Accipiter virgatus*) to which it bears an extraordinary resemblance.—H. C. R.]

TROGONIDÆ.

133. *PYROTROGON ERYTHROCEPHALUS* (GOULD).

Pyrotrogon erythrocephalus, *Grant*, p. 106.

a. m. Gunong Ulu Kali. 4,800-5,800 ft. 5th February, 1906.

134. *PYROTROGON KASUMBA* (RAFFL.).

Pyrotrogon kasumba, *Hartert*, *Nov. Zool.*, ix., p. 544 (1902).

a.-d. m., f. Kuala Teku, Tahan River. 500 ft. August, 1905. (Nos. 498, 505, 509, 512).

Iris, reddish-chestnut; culmen and genys, black; remainder of bill, purplish-cobalt; orbital space, purplish-cobalt; feet, bluish lead-colour.

135. *PYROTROGON ORESKIOS* (TEMM.).

Harpactes oreskios, *Grant*, p. 106.

a., b. m. et m. imm. Gunong Tahan (6th Camp). 3,000 ft. June, 1905. (No. 49).

Iris, brown; bill and orbital skin, purplish-cobalt; feet, dark dull lake.

[The habits of all the species of Trogons are very similar. They are never found out of virgin forest and are singularly sluggish and

inactive birds. They are rarely found on lofty trees, but frequent creepers and shrubs of medium size. Nearly all the specimens that I have ever seen were perched motionless on branches and seemed to trust to absolute quiescence to escape notice. Under such conditions, it is extraordinary how difficult it is to make out what one would naturally suppose to be an exceptionally conspicuous bird. Personally I have never heard the note of any Trogon, though I have watched *P. duvauceli* for lengthened periods.

P. oreskios is a bird of very restricted range, as regards altitude. Though widely spread in the Malay Peninsula, it is not found below 2,500 ft. or above about 4,000 ft. It is worthy of note that *P. erythrocephalus* does not occur on Gunong Tahan, though it is very common indeed, on the Perak and Selangor mountains. It could hardly have escaped notice as our Dyak hunters, who know the bird well, had special instructions to search for it.—H. C. R.]

CYPSELIDÆ.

136. CHÆTURA GIGANTEA.

Chaetura gigantea (Temm.); *Hartert, Cat. Birds, Brit. Mus.*, xvi., p. 475 (1892); *Ridley, Journ. Straits Branch Roy. Asiat. Soc.*, xxv., p. 62 (1894), (Coast of Pahang).

a. m. Kuala Tembeling, Pahang River. 200 ft. 22nd August, 1905. (No. 559).

[On cloudy evenings, after rain, this species was seen in considerable numbers at Kuala Tembeling, usually appearing about half an hour before sunset. A single male only was shot and dissection showed that it had been feeding largely on cockchafers of considerable size, which were swallowed whole.

This specimen which is in freshly moulted plumage is typical *C. gigantea*, having the loreal spot deep black, but it may be remarked that specimens shot in February and May on the Semangko Pass between Selangor and Pahang at an altitude of about 2,700 ft. have this spot pale smoky brown, in one case almost white, and in this respect approach *C. indica*. From the same locality the Selangor Museum also possesses a specimen of the rare *C. cochinchinensis*, Oust., shot by Mr. A. L. Butler in November, 1900. The species is readily distinguished from the allied forms by having the throat and dorsal region pale smoky brown, and also by its considerably smaller size.—H. C. R.]

137. CHÆTURA LEUCOPYGIALIS (BLYTH).

Chaetura leucopygialis, *Hartert, Cat. Birds., Brit. Mus.*, xvi., p. 490 (1892).

a., b. 2 f. Kuala Teku, Tahan River. 500 ft. July, 1905. (Nos. 436, 458).

[The commonest species of the genus in the Malay Peninsula and widely distributed throughout the country, but commoner in the more inland districts.—H. C. R.]

138. MACROPTERYX LONGIPENNIS (RAFIN.).

Macropteryx longipennis, Sharpe, *P.Z.S.*, 1888, p. 278; *Hartert, Cat. Birds, Brit. Mus.*, p. 514 (1892).

a., b. f. Kuala Tembeling, Pahang River. 200 ft. 25th August, 1905. (Nos. 592, 593).

[We only met with this Tree-swift on one occasion when it suddenly appeared in very large numbers, hawking after a flight of swarming termites. It is a somewhat local bird, though wherever it occurs it is common, and frequents open forest-country and jungle-streams. It ascends the mountains to a height of about 3,000 feet.—H. C. R.]

139. MACROPTERYX COMATA (TEMM.).

Macropteryx comatus, Sharpe, *P.Z.S.*, 1888, p. 278; *Hartert, Cat. Birds, Brit. Mus.*, xvi., p. 517 (1892); *id.*, *Nov. Zool.*, ix., p. 544 (1902).

a.-c. m., f. Kuala Teku, Tahan River. 500 ft. July, 1905. (Nos. 433-435).

[In the early mornings and late afternoons this pretty little species was very common at Kuala Teku. It frequented one particular tall dead tree overhanging the river. Each bird seemed to have its own perch on the topmost branches of this tree, from which it made short flights after insects, always returning to the same place.

A very large species of *Collocalia*, with a white rump patch, was common on Gunong Tahan in the neighbourhood of our 6th Camp and on the cliffs between that place and the plateau. We did not succeed in obtaining specimens, as the only one that was shot fell hundreds of feet below us and was never retrieved. The species was possibly *C. innominata*, Hume, which is not uncommon on the mountains of the Peninsula.—H. C. R.]

CAPRIMULGIDÆ.

140. BATRACHOSTOMUS STELLATUS (GOULD.).

Batrachostomus stellatus, *Hartert, Cat. Birds, Brit. Mus.*, xvi., p. 639 (1892); *id.*, *Nov. Zool.*, ix., p. 542 (1902).

a. f. Kuala Tembeling, Pahang River. 200 ft. 28th August, 1905. (No. 606).

Iris, dark brown; bill, pinkish horn-colour; feet, brownish flesh-colour.

[A Night-jar (*Lyncornis temmincki*) with a curious trisyllabic note *tert-ta-bu* was often heard and seen at Kuala Tembeling, but no other species was met with. Indeed, the only member of the family that is found in old jungle is *Caprimulgus indicus*, and that only on migration. *Caprimulgus macrurus* is never found far from cleared land or secondary jungle.—H. C. R.]

BUCEROTIDÆ.

141. ANTHRACOCEROS CONVEXUS (TEMM.).

Anthracoceros convexus, Grant, *Cat. Birds, Brit. Mus.*, xvii., p. 364 (1892).

Anthracoceros malabancus, *Grant (nec Gmel.)*, p. 107.

a.-c. m., f. Kuala Tembeling, Pahang River. 200 ft. August and September, 1905. (Nos. 544, 555, [651].)

Bare skin behind the eye and on the sides of the throat of a silvery white, in front of eye purplish-blue.

[This Hornbill, which is a bird of cultivation and never found in old jungle, is the most conspicuous species on the Pahang River and its tributaries as far as human habitations extend and may constantly be seen flying across the river in the early morning and late evening. Its cry is a harsh cackle and its flight laboured, consisting of three beats of the wings following in quick succession and then a pause. It is gregarious, the flock consisting of from three to four to as many as forty individuals. The food is principally the fruit of various large species of banyan and the trees are systematically worked until every fruit is eaten.—H. C. R.]

142. ANTHRACOCEROS MALAYANUS (RAFFL.).

Anthracoceros malayanus, *Grant, Cat. Birds, Brit. Mus.*, xvii., p. 368 (1892).

a. m. imm. Kuala Tembeling, Pahang River. 27th August, 1905. (No. 601).

Iris, dark brown; orbital skin, flesh-colour; bill and feet, black.

[In contradistinction to *A. malabaricus* this is an old jungle species. In the central portions of the Malay Peninsula it is decidedly rare as this is the only specimen I have myself met with, while it is but poorly represented in the Perak and Selangor Museums.—H. C. R.]

143. ANORRHINUS GALERITUS (TEMM.).

Anorrhinus galeritus, *Grant, Cat. Birds, Brit. Mus.*, xvii., p. 391 (1892).

a.-c. m., f. Kuala Teku, Tahan River. 500 ft. August, 1905. (Nos. 468, 515).

Male.—Iris, red; patch of skin at the base of the mandible and a large patch above and behind the eye livid, silvery-white with a strong bluish-tinge; bill, black; feet, greyish-black.

Female.—As in the male, but the greater part of the bill is ivory-white, the casque more yellow.

[In the Malay Peninsula this bird is an inhabitant of the deep jungles on the lower slopes of the bigger mountains, not, however, ascending much above 3,000 ft. Its flight is not nearly so powerful or sustained as that of the larger species, but it is excessively wary, so much so that it is hopeless to approach it except when feeding, and then the birds are usually so high above the ground that it takes a very heavy charge to bring them down. They are usually met with in parties of five or six.—H. C. R.]

MEROPIDÆ.

144. NYCTIORNIS AMICTUS (TEMM.).

Nyctiornis amictus, *Hartert. Nov. Zool.*, ix., p. 544 (1902).

a. 1 *m. imm.* Gunong Tahan (8th Camp). 5,300-6,000 ft. 18th July, 1905. (No. 352).

b., c. *m.* Kuala Teku, Tahan River. 500-1,000 ft. August, 1905. (Nos. 493, 494).

d. adult. Kuala Tembeling, Pahang River. 200 ft. August, 1905. (No. 620).

Adult.—Iris, orange; bill, black, bluish at base; feet, pale greenish-lead.

Immature male.—Iris, bright yellow; bill, as in the adult; feet, pale sea-green.

[This large Bee-eater is common in many localities in Selangor and Perak up to about 3,500 ft. It frequents old forest and is not, as a rule, found in the neighbourhood of cultivation. The young specimen listed above is entirely green, with only one mauve feather just above the eye. When first secured, I thought that it belonged to the northern species, *N. athertoni*, seeing that it was obtained at an altitude far above the usual range of the species. One other specimen was seen, also entirely green, so that possibly they belonged to one nest. Mr. Wray (P.Z.S., 1887, p. 432) has recorded the existence of a Green-headed Bee-eater in the Larut Hills (3,000-5,000 ft.), but specimens were not obtained.—H. C. R.]

ALCEDINIDÆ.

145. HALCYON SMYRNENSIS (LINN.).

Halcyon smyrnensis, *Grant*, p. 110.

a.-c. *f. et f. imm.* Kuala Tembeling, Pahang River. 200 ft. 2nd September, 1905. (Nos. 632-634).

[This is perhaps the commonest Kingfisher in the cultivated districts of the Malay Peninsula. It is less dependent on the proximity of water than *Alcedo ispida*, which seems to be almost purely piscivorous, while the present bird eats small crabs, centipedes and the like.—H. C. R.]

146. HALCYON CONCRETUS (TEMM.).

Halcyon concretus, *Sharpe, Cat. Birds, Brit. Mus.*, xvii., p. 285 (1892).

a. *m. imm.* Kuala Teku, Tahan River. 500-1,500 ft. 29th July, 1905. (No. 441).

b., c. *m., f. ad.* Kuala Tembeling, Pahang River. 200 ft. 24th August, 1905. (No. 605).

Iris, hazel; bill, blackish, chrome-yellow at the base and tip; feet, pale chrome.

[A rather scarce species, entirely confined to deep jungle.—H. C. R.]

147. *CARCINEUTES PULCHELLUS* (HORSF.).

Carcineutes pulchellus, *Grant*, p. 111.

- a. f. Kuala Teku, Tahan River. 500-1,500 ft. 30th July, 1905.
b. f. Kuala Tembeling, Pahang River. 200 ft. 28th August, 1905.

Iris, dull yellow; bill, deep vermilion; naked skin round the eye and gape, orange; tarsus, greenish; toes, yellowish-brown.

[Frequents similar localities to *Halcyon concretus* and like that species is often found far from water.

At Kuala Teku and also on the Tembeling River a medium-sized Short-tailed Kingfisher, with rufous undersurface and a blue pectoral belt, was often seen, but it flew so fast and always appeared so unexpectedly, that we never secured it. I imagine that it was the rare *Alcedo euryzona* (Temminck), of which I have only seen one specimen from the Peninsula, though it is probably not very uncommon on mountain streams.—H. C. R.]

148. *CEYX EUERYTHRA*, SHARPE.

Ceyx euerythra, *Sharpe*, *Cat. Birds, Brit. Mus.*, xvii., p. 179 (1892).

Ceyx dillwynni, *Hartert (nec Sharpe)*, *Nov. Zool.*, ix., p. 543 (1902).

- a., b. m. et m. imm. Kuala Tembeling, Pahang River. 200 ft. August and September, 1905. (Nos. 581, 629).

Iris, dark brown; bill and feet, orange-vermilion.

A young bird has the chin and throat pure white, a broad rufous pectoral band, the flanks rufous and the middle of the abdomen whitish, tinged with buff.

[The *Ceyces* are never found far from water over the surface of which they fly with great rapidity. They are not common in open country, but prefer the small streams running through deep jungle. They do not ascend the hills to any height, being rarely found much above 1,000 ft.—H. C. R.]

149. *ALCEDO ISPIDA*, LINN.

Alcedo ispida, *Grant*, p. 111.

- a. f. Kuala Tembeling, Pahang River. 200 ft. 29th August, 1905. (No. 615).

Iris, dark brown; bill, blackish above, reddish beneath; tarsus, vermilion.

[A low ground species, frequenting the open country in the vicinity of water and never found in deep jungle or on the hills.—H. C. R.]

150. *PELARGOPSIS MALACCENSIS*, SHARPE.

Pelargopsis javana malaccensis, *Hartert*, *Nov. Zool.*, ix., p. 542 (1902).

- a. m. Kuala Tembeling, Pahang River. 200 ft. 3rd September, 1905. (No. 640).

[The Stork-billed Kingfisher is rarely seen away from the big rivers and increases in numbers towards the mouths. It is most abundant on the mangrove-lined tidal creeks.—H. C. R.]

PSITTACIDÆ.

151. LORICULUS GALGULUS (LINN.).

Loriculus galgulus, *Grant*, p. 112.

a. f. m., f. et m. imm. Kuala Tembeling, Pahang River. 200 ft. September, 1905. (Nos. 630, 631, 641, 642, 645, 654).

152. PSITTINUS MALACCENSIS (LATH.).

Psittinus malaccensis, *Grant*, p. 112.

a. m. imm. Kuala Tembeling, Pahang River. 200 ft. 21st August, 1905. (No. 553).

Iris, yellowish-white; upper mandible, vermilion, dark at tip; lower mandible, wax-yellow.

BUBONIDÆ.

153. PHOTODILUS BADIUS (HORSF.).

Photodilus badius, *Grant*, p. 112.

a. 1. f. Kuala Teku, Tahan River. 500-1,000 ft. 30th July, 1905.

Iris, black; bill, pinkish horn-colour; tarsi, pale yellow; toes, pinkish horn-colour.

[Curiously enough this bird was trapped in a snare set for Argus Pheasants.—H. C. R.]

154. SYRNIUM MAINGAYI, HUME.

Syrnium maingayi, *Sharpe*, *P.Z.S.*, 1887, p. 470.

a. m. Kuala Tembeling, Pahang River. 200 ft. 30th August, 1905. (No. 616).

Iris, dark brown; bill, bluish-horn, yellowish at tip; feet, dull bluish-lead.

[Brought to us by a native who had caught it under his house.

This species evidently rare, as it is not represented either in the Singapore, the Perak, or the Selangor Museums. *Syrnium seloputo*, on the other hand, is common enough.—H. C. R.]

155. HETEROSCOPS VULPES, GRANT.

(Plate II., Fig. 2.)

Pisorhina luciæ, *Hartert* (*nec Sharpe*), *Nov. Zool.*, ix., p. 541 (1902).

Heteroscops vulpes, *Grant*, *Bull.*, *B.O.C.*, xix., No. cxxvii., p. 11 (1906).

a. m. Gunong Tahan. 5,300 ft. 25th June, 1905. (No. 213).

Adult male.—Nearly allied to *H. luciæ*, *Sharpe*, from the mountains of North Borneo, but, with the general colour both above and below fawn-red and more uniform in tint, the black markings

being much reduced especially on the top of the head. Total length : ca., 7.0 in. ; wing, 5.4 in. ; tail, 2.7 in. ; tarsus, 1.1 in.

The male bird in the Tring Museum, also from Gunong Tahan and doubtfully referred to *H. luciae* by Dr. Hartert, is in partially immature plumage. This is indicated by the transverse black markings on the top of the head ; in other respects it agrees well with the adult male procured by Mr. Robinson.

[I was absent from camp for some days at the time this was secured and the colours of the soft parts, etc., are, therefore, not recorded. It was shot, sitting in a bush at the bottom of a rocky gorge. No owls were heard during our six weeks' stay above 5,000 ft., nor were any specimens* other than those secured seen.—H. C. R.]

156. GLAUCIDIUM BRODIEI (BURTON).

Glaucidium brodiei, Sharpe, *P.Z.S.*, 1887, p. 434.

a. f. Gunong Tahan (8th Camp). 5,300-6,000 ft. 9th July, 1905. (No. 320).

Iris, bright lemon-yellow ; bill and feet, pale greenish-yellow ; soles, brighter yellow.

[In the Malay Peninsula this species is strictly confined to the mountains. I have obtained specimens from Semangko (3,500 ft.) and Telôm (4,000 ft.) and one is recorded from the Larut Hills in North Perak.—H. C. R.]

157. KETUPA KETUPA (KAUP.).

Ketupa ketupa, Grant, p. 113.

a. m. Kuala Tembeling, Pahang River. 200 ft. 19th August, 1905. (No. 536).

Iris, bright chrome ; bill, bluish horn-colour ; tarsus and feet, dirty white.

FALCONIDÆ.

158. MICROHIERAX FRINGILLARIUS (DRAGS).

Microhierax fringillarius, Grant, p. 113.

a. f. (nat. coll.) Kuala Tembeling, Pahang River. 200 ft. 29th August, 1905. (No. 608).

Iris, yellowish ; bill and feet, black.

[The Black-legged Falconet is not nearly so common in Pahang as it is in Perak and Patani, and this was the only specimen observed. It frequents the edges of the rice-fields and recent clearings and perches on lofty dead boughs, flying out after large grasshoppers and occasionally striking down small birds.—H. C. R.]

159. SPILORNIS BACHA (DAUD).

Spilornis bacha, Grant, p. 114.

a. f. Kuala Tembeling, Pahang River. 200 ft. 23rd August, 1905.

Iris, chrome ; cere and feet, dull yellow ; bill, bluish-horn.

* Two specimens have recently been obtained on Gunong Mengkuang Lebah, Selangor, 4,800 ft.—H. C. R.

[Fairly common on the rice-fields, perching on isolated trees, but very wary and difficult to approach, except in the early morning and late afternoon when it is quite sluggish.—H. C. R.]

CHARADRIIDÆ.

160. TRINGOIDES HYPOLEUCUS (LINN.).

Tringoides hypoleucos, *Hartert, Nov. Zool.*, ix., p. 540 (1902).

a., b. f. Kuala Tembeling, Pahang River. 200 ft. August, 1905. (No. 548)
Feet, greyish lead-colour.

COLUMBIDÆ.

161. CHALCOPHAPS INDICA (LINN.).

Chalcophaps indica, *Grant*, p. 120.

a. m. Gunong Tahan. 4,000-4,500 ft. 14th June, 1905. (No. 115).

Iris, dark brown; bill, coral, lake at the base; feet, dark purplish-red; claws, yellowish horn-colour.

[Common everywhere in low country jungle, but rare above 3,000 ft.—H. C. R.]

162. MACROPYGIA LEPTOGRAMMICA (TEMN.).

Macropygia tusalia, *Sharpe (nec Hodgs.)*, *P.Z.S.*, 1887, p. 443.

Macropygia leptogrammica, *Salvad, Cat. Birds, Brit. Mus.*, xxi., p. 341 (1893).

a.-c. m., f. et f. imm. Gunong Ulu Kali, Selangor. 4,800-5,800 ft. January and February, 1906.

163. MACROPYGIA RUFICEPS (TEMN.).

Macropygia ruficeps (? *an. sp. nov.*), *Hartert, Nov. Zool.*, ix., p. 540 (1902).

a.-c. f. Gunong Ulu Kali, Selangor. 4,800-5,800 ft. February, 1906.

Those females cannot be distinguished from typical females of *M. ruficeps* from Java.

164. TURTUR TIGRINUS (TEMN. AND KNIP.).

Turtur tigrinus, *Grant*, p. 121.

a.-c. f. Kuala Tembeling, Pahang River. 200 ft. August, 1905. (Nos. 545, 549, 563).

Iris, dark brown; bill, black; feet, lake.

[Common in the open country, on the banks of the Pahang and Tembeling Rivers.—H. C. R.]

165. SPHENOCERCUS ROBINSONI, GRANT.

Sphenocercus robinsoni, *Grant, Bull., B.O.C.*, xix., No. cxlvii., p. 12 (1906).


Adult male.—Most like *S. permagnus*, Stejn., from the Loo-Choo Islands, but differs from that species in its much smaller size

somewhat greyer mantle, greyish-olive rump and tail and in having the middle of the abdomen decidedly yellow and the long under tail-coverts washed with cinnamon. In the two last-named characters it resembles *S. korthalsi* (Temm.) from Sumatra and Java, but it entirely lacks the rufous tinge across the breast, which is so characteristic of the male of that species.

Iris, pale blue; outer ring, pink; bill, purplish-mauve, greenish horn-colour at the base; feet, lake; soles, yellowish.

Total length: ca., 12.0 in.; wing, 6.5 in.; tail, 4.9 in.; tarsus, 0.9 in.

Adult female.—Very similar to the female of *S. permagnus*, but much smaller and with the middle of the belly decidedly yellow.

 Total length: ca., 11.0 in.; wing, 6.4 in.; tail, 4.4 in.; tarsus, 0.9 in.

Three less adult male specimens have the olive-green of the head, neck and breast less bright than the adult, the maroon shoulder patch much 'smaller and the long under tail-coverts yellowish-white with only the faintest tinge of cinnamon.

a.-d. *m.* Gunong Tahan (6th Camp). 3,300 ft. 1st-8th June, 1905. (Nos. 12, 35, 36, 63).

e. *f.* Gunong Ulu Kali. 4,800-5,800 ft. 9th February, 1906.

[This fine Pigeon was apparently not very uncommon on the lower slopes of Gunong Tahan, though I only saw it once myself and never shot a specimen. My Dyaks told me that it was found singly feeding on the tops of tall trees and was very wary. The single specimen that I saw myself was flying at dusk across the ridge on which our camp was situated.

No other Fruit-Pigeon occurs on the mountain, nor did we meet with *Carpophaga badia*.—H. C. R.]

166. TRERON NIPALENSIS (HODGS.).

Treron nipalensis, Grant, p. 122.

a.-d. *m., f.* Kuala Tembeling, Pahang River. 200 ft. August, 1905. (Nos. 590, 594, 598, 599).

Iris, orange-red; orbital skin, apple-green; bill, greenish horn-colour, base of the lower mandible, crimson; feet, lake.

[Large flocks of this species, numbering sixty or seventy individuals, were met with at Kuala Tembeling, feeding on the fruit of a very large fig tree in company with *Anthracoceros convexus* and numerous smaller birds.—H. C. R.]

TURNICIDÆ.

167. TURNIX TAIGOOR (SYKES).

Turnix taigoor, Sykes, Grant, p. 122.

a. *m.* Kuala Tembeling, Pahang River. 200 ft. 9th September, 1905. (No. 650).

[In the open grazing lands along the banks of the Pahang and the lower reaches of the Tembeling Rivers both Bustard- and Button-

Quails were very common, but, in the absence of a dog, it was very hard to secure specimens. On the road between Kuala-Lipis and the Raub Gold Mines where large areas of land have been over run with "lalang" grass the motor car, on which we travelled, flushed large numbers of them. The female of the Bustard-Quail is captured by the Malays by means of a decoy and an ingenious cage, the front of which is weighted and falls as soon as the bird enters. The female is extremely pugnacious, and is used as a fighting bird.—H. C. R.]

PHASIANIDÆ.

168. GALLUS GALLUS, LINN.

Gallus gallus, *Grant, Cat. Birds, Brit. Mus.*, xxii., p. 344 (1893).

a. m. Kuala Tembeling, Pahang River. 200 ft. 19th August, 1905. (No. 538).

Iris, hazel; bill, horn; feet, bluish lead-colour.

[At the above locality the Jungle-Cock was very common in the secondary jungle round the villages. In the Malay Peninsula it does not occur in high forest.—H. C. R.]

169. POLYPLECTRON INOPINATUS (ROTHSCH.).

Chalcurus inopinatus, *Rothsch., Bull., B.O.C.*, xiii., No. xcv., p. 41 (1903).

a. f. Gunong Tahan (6th Camp). 3,300 ft. 3rd June, 1905. (No. 35).

b. f. Gunong Mengkuang Lebah, Selangor. 5,200 ft. 2nd April, 1905.

Female.—Iris, hazel; bill, bluish horn-colour, paler at the tip; feet, French-grey with a bluish-tinge; soles, yellowish-green.

[We only managed to get one specimen of this fine Peacock-Pheasant on Gunong Tahan, where it appears to be rare. On the mountains of Selangor it is, however, comparatively common, and is found singly in steep gullies near the tops of the mountains amidst a thick undergrowth of creeping rotans and other thorny palms. The species is evidently the highland representative of *Polyplectron malaccensis*, which is not found above about 3,000 ft.—H. C. R.]

The male of this species possesses twenty tail feathers, and it seems very doubtful to me whether it has been rightly placed in the genus *Chalcurus*, for, though it has the sides of the face feathered and has no pronounced crest in its general marking and in all other respects, it is a *Polyplectron*. I, therefore, prefer to include it in that genus, the characters of which, in consequence, have to be slightly modified.

170. PAVO MUTICUS, LINN.

Pavo muticus, *Grant*, p. 123.

a. f. Kuala Tembeling, Pahang River. 200 ft. 25th August, 1905. (No. 595).

Female.—Iris, dark hazel; orbital skin, pale chrome, tinged with purplish above, but the two colours are not sharply defined as in the male; bill, whitish horn-colour; feet, greyish-black.

[Pea-fowl are very common on the banks of the Pahang River and its larger tributaries, and may often be seen on the sand-banks in the early morning in parties of four or five, taking very little notice of passing boats. In the heat of the day they lie up in the thick herbage that clothes the banks and roost in high trees at night. The species is common nearly everywhere on the east coast of the Peninsula, but is now hardly known on the west coast, except on the upper reaches of the Perak River.—H. C. R.]

171. ARGUSIANUS ARGUS (LINN.).

Argusianus argus, *Grant*, p. 123.

a., b. m., f. Kuala Teku, Tahan River. 500-1,000 ft. July, 1905. (Nos. 431, 459).

Iris, greyish-brown; bill, horn-colour: naked skin, dull cobalt; feet, red, with a strong tinge of pink.

[The Argus Pheasant was very common on the lower slopes of Gunung Tahan up to about 2,500 ft., where its place seems to be taken by *Rheinardius*, as at this altitude feathers of both species were found on the same playing-ground.

Our specimens were captured in a "jerat," which consists of a low roughly woven fence about 18 in. high and provided with narrow openings every fifty yards in which a snare is set. This fence should be run along a ridge just below its comb, and is generally successful in catching any birds that are about. Our one secured a variety of game, including a rare Insectivore (*Gymnura rafflesi*) and an Owl (*Photodilus badius*).—H. C. R.]

172. RHEINARDIUS NIGRESCENS, ROTHSCH.

Rheinardius ocellatus nigrescens, *Hartert*, *Nov. Zool.*, ix., p. 538 (1902).

a. m. Gunong Tahan. 2,500 ft. 7th June, 1905.

b. m. (fragments) „ „ 23rd June, 1905.

Iris, brown; skin round eyes, bluish-grey; bill, tinged with pink near the gape; feet and legs, dark brownish-grey.

[This specimen was shot by one of our Dyaks who had a remarkable gift for stalking ground-birds, and another was captured in a "jerat" near the same place. Unfortunately, a Musang had been before and entirely destroyed it as a specimen. I have, however, preserved the head, wings and tail, as it is unlikely other specimens will be available for some time to come.—H. C. R.]

173. LOPHURA RUFA (RAFF.).

Lophura rufa, *Grant*, *Cat. Birds, Brit. Mus.*, xxii., p. 286 (1893).

a. m. Kuala Tembeling, Pahang River. 200 ft. 23rd August, 1905. (No. 575).

Iris, brown; orbital skin, purplish-blue; bill, greenish horn-colour; tarsal scutes, crimson lake in front, whitish behind.

The "burong pegar," as this species is called, is very common in Pahang in low country jungle near the rivers. It is very rare in Selangor and Perak and probably reaches its northern limit about the latitude of Penang.—H. C. R.]

174. *ROLLULUS ROULROUL* (Scop.).

Rollulus roulroul, *Hartert, Nov. Zool.*, ix., p. 539 (1902).

a.-i. m., f. Gunong Tahan (6th Camp). 3,300 ft. June, 1905. (Nos. 60, 78, 81-83, 107, 526-528).

k. f. Kuala Tembeling, Pahang River. 200 ft. 1st September, 1905. (No. 626).

Male.—Iris, brown; bill, black, basal portion of lower mandible crimson; legs, crimson.

Female.—Similar to the male, except that it lacks the crimson patch at the base of the bill.

Very common everywhere in old jungle up to about 3,300 ft., but not higher. Several were caught in the snares set for Argus Pheasants, but unlike most of the jungle game birds, they are quite easily shot, as their note, a clear whistle, from which the vernacular name of the bird (*burong siul*) is derived, is easily imitated. They are found in parties of six or eight, and the males appear to be more numerous than the females. On one occasion four were obtained at one shot.—H. C. R.]

175. *MELANOPERDIX NIGRA* (Vigors).

Melanoperdix nigra, *Grant, Cat. Birds, Brit. Mus.*, xxii., p. 228 (1893).

a. f. Kuala Teku, Tahan River. 500 ft. 3rd August, 1905. (No. 483).

[The Black-wood-Partridge is usually found in pairs in deep jungle. It is not a hill-species and is most abundant where the undergrowth is mainly composed of the Bertam palm (*Eugeissona tristis*), whence its Malay name "burong bertam."—H. C. R.]

EXPLANATION OF PLATES.

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|--------------------|--|---------|
| Plate II., Fig. 1. | <i>Gecinus robinsoni</i> , <i>Grant</i> , male | (p. 42) |
| " 2. | " " " female | |
| " III., " 1. | <i>Cissa robinsoni</i> , <i>Grant</i> | (p. 16) |
| " 2. | <i>Heteroscops vulpes</i> , <i>Grant</i> | (p. 51) |



J. Green. Chromo Lith.

1. HETEROSCOPS VULPES. 2. CISSA ROBINSONI.

III.

FISHES, BATRACHIANS AND
REPTILES.

BY

G. A. BOULENGER, F.R.S.

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FISHES, BATRACHIANS AND REPTILES.

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THE following is a List of the Fishes, Batrachians and Reptiles obtained by Messrs. L. Wray and H. C. Robinson on an expedition to Gunong Tahan, Pahang.

FISHES.

1. *BARBUS OATESII*, BÉGE.

Kuala Teku, 500 ft.

This species was only known from the Shan States at 2,000 ft. elevation.

[MALAY NAME.—Ikan daun.—H. C. R.]

2. *DANGILA CUVIERI*, C. & V.

Kuala Teku, 500 ft., and Kuala Tahan.

[MALAY NAME.—Ikan kilat.—H. C. R.]

3. *BOTIA HYMENOPHYSA*, BÉGE.

Kuala Teku, 500 ft.

Known from Java, Sumatra, Borneo and Siam.

[Evidently common in the Pahang River and its tributaries; specimens from Ulu Jelai are in the Singapore Museum.—H. C. R.]

BATRACHIANS.

1. *LEPTOBRACHIUM GRACILE*, GÜTH.

Gunong Tahan, 5,200 ft.

Young specimens, with remains of the tail, measure 27 mm. from snout to vent.

This species was only known from Borneo.

[This Frog, together with *Rana larutensis*, was found at night among the stones of a rapid mountain torrent near my 8th Camp on Gunong Tahan. It was extremely active and difficult to capture, and on the least alarm leaped into the water.—H. C. R.]

2. *BUFO PENANGENSIS*, STOL.

Gunong Tahan, 3,600 ft.

3. BUFO ASPER. GRAYH.

Tahan River and Kuala Teku, 500 ft.

[Very young specimens of this Toad were extremely common along the sandy banks in certain parts of the Tahan River; they harmonised with their surroundings in a most wonderful manner, so that it was almost impossible to detect them, except when in motion.]

MALAY NAME.—Katak rinkok.—H. C. R.]

4. BUFO PARVUS, BLGR.

Kuala Teku, 500 ft.

5. CALOPHRYNUS PLEUROSTIGMA, TSCH.

Gunong Tahan, 3,000 ft.

[Though only a single specimen of this Frog was obtained, it was probably anything but rare, as its peculiar note, more like that of an insect than a batrachian, was constantly heard in the evening after rain. The species lives in small holes in tree trunks, often at a considerable height from the ground, and is to be secured by dropping salt into the water with which the hole is generally filled, when the Frog will rise to the surface.—H. C. R.]

6. RANA KUHLLI, D. & B.

Gunong Tahan, 3,000 ft.

[A mountain form, widely spread throughout the Peninsula, but very local and nowhere common.—H. C. R.]

7. RANA HASCHEANA, STOL.

Kuala Teku, 500 ft.; Gunong Tahan, 5,200 ft.

[Local and rare in the Malay Peninsula.—H. C. R.]

8. RANA NICOBARIENSIS, STOL.

Kuala Tahan (confluence of Tahan and Tembeling Rivers).

[The only other known locality in the Malay Peninsula is the Batu Caves, Kuala Lumpur (cf. *Journ. Federated Malay States Mus.*, i., p. 20).—H. C. R.]

9. RANA ERYTHREA, SCHLEG.

Kuala Lipis, 200 ft.

[The common *katak pisang* of the Malays, found everywhere in cultivated land throughout the Peninsula.—H. C. R.]

10. RANA HOSII, BLGR.

Tahan River and Kuala Teku, 500 ft.

The longer hind limbs distinguish this species, previously known only from Borneo, from *R. chalconota*, Schleg. Males are much smaller than females and have the tympanum larger in proportion to the size of the digital disks.



1. IXALUS BREVIPES. 2. DRACO CYANOLEMUS.
3. LYGOSOMA COPHIAS.

J. Green del. lith et imp.

Very common at night on the upper reaches of the Tahan River, sitting on the granite boulders and plunging into the water at the slightest alarm.—H. C. R.]

11. *RANA GLANDULOSA*, BLGR.

Kuala Lipis, 200 ft.

[Beneath houses.—H. C. R.]

12. *RANA LARUTENSIS*, BLGR.

Tahan River, Kuala Teku, 500 ft.; Gunung Tahan, 5,200 ft.; Ginting Simpah, Selangor-Pahang Boundary, 1,800 ft.

Males, which are provided with vocal sacs forming folds on the sides of the throat, do not exceed a length of 45 mm. from snout to vent. The largest female measures 70 mm. from snout to vent.

[Common only in clear water streams at some elevation. At the breeding season males are brilliantly coloured with red and bright sage-green on the fore-limbs, head and upper surface.—H. C. R.]

13. *RHACOPHORUS LEUCOMYSTAX*, GRAVE.

Kuala Lipis, 200 ft.

[Common everywhere in the cultivated zone.—H. C. R.]

14. *RHACOPHORUS ROBINSONII*, BLGR.

Rhacophorus robinsonii, *Blgr., Fascic. Malay. Zool.*, pt. i., p. 136, pl. v., fig. 2 (1903).

Kuala Teku, 500 ft.

[This specimen, the second known, differs considerably in colour from the type collected on Bukit Besar, in the Native State of Jalor, considerably to the north of Pahang. The following notes were taken from it when alive:

“General colour above pinkish-brown, obscurely vermiculated and mottled with blackish. A regular black line between the eyes, a very obscure arched one between the tympana and another between the fore-angles of the eyes. Limbs with obscure cross bars of blackish, formed by small dots. Colour below whitish-brown, tinged with pink; interdigital membrane blackish with a brownish median line; skin of belly shagreened. A large cream spot beneath the eye. Pupil horizontal, iris mottled golden. Apparently little power of colour change.”—H. C. R.]

15. *IXALUS BREVIPES*, *sp. nov.*

Head large, broader than long: snout rounded, shorter than the diameter of the orbit: canthus rostralis obtuse: loreal region concave: nostril nearer the tip of the snout than the eye: interorbital space broader than the upper eyelid: tympanum moderately distinct, one-third the diameter of the eye. Fingers short, free, with large disks: toes short, barely half webbed. Tibio-tarsal articulation reaching the posterior border of the eye; tibia half the length of head and body. Skin smooth above, glandular on the sides, granular on the throat and belly. Greyish-olive above with symmetrical dark markings—viz., a

large transverse spot between the eyes and a large marking on the anterior part of the back, trifid in front, the median branch bifurcate and extending to the upper eyelids, bifid behind; a dark canthal streak; sides reddish-brown with white dots; limbs with dark cross bars; lower parts dirty white.

From snout to vent, 31 mm.

A single female specimen from Gunong Tahan, 3,000 ft.

16. *IXALUS LARUTENSIS*, BLGR.

Gunong Tahan, 3,000 ft.

[General colour deep brown; a broad area from between nostrils to vent, broadest between the eyes, which it touches, golden yellowish-brown; beneath whitish, mottled with brown.—H. C. R.]

REPTILES.

1. *PTYCHOZOON HOMALOCEPHALUM*, CREV.

Gunong Tahan, 3,000 ft.

[Caught by a native in the act of flight from one tree trunk to another.—H. C. R.]

2. *DRACO FIMBRIATUS*, KUHL.

Gunong Tahan, 3,000 ft.

[This Flying Lizard is a decidedly scarce species in the Malay Peninsula and is usually found in lowland jungle, the present altitude probably representing its superior limit in elevation. In life, the present specimen was noted as "greyish above with a tinge of green, a decided brown tint on nape; beneath buffy white; gular appendage pale salmon."—H. C. R.]

3. *DRACO CYANOLEMUS*, *sp. nov.*

Head small; snout as long as the diameter of the orbit; nostril lateral, directed outwards; tympanum naked. Upper head-scales very unequal, keeled; eight or nine strongly keeled upper labials. Gular appendage short (female). No nuchal crest. Dorsal scales subequal, smooth, a little smaller than ventrals; a lateral series of distant enlarged scales. The fore limb stretched forwards reaches the tip of the snout, the hind limb reaches the axil. No caudal crest. Greyish above: wing-membranes above broadly edged with brick-red, with four regular broad black transverse bands spotted with white, white beneath with a few black spots towards the body; throat blue, gular appendage yellow.

Total length	...	...	...	...	305 mm.
Head	...	...	...	...	21 "
Width of head	...	...	...	...	14 "
Body	...	...	...	...	89 "
Fore-limb	...	...	...	...	46 "
Hind-limb	...	...	...	...	57 "
Tail	...	...	...	...	195 "



GONYCEPHALUS ROBINSONII.

J. Green del lith. et imp.

A single female specimen from Telôm, Perak-Pahang Boundary, altitude about 4,000 ft.

This new species is unique in combining lateral nostrils with regular cross bands on the wings.

[Two specimens of this new *Draco* were collected at Telôm in October, 1904, but on cursory examination were referred to *D. quinquefasciatus*, to which the present species bears some slight superficial resemblance.—H. C. R.]

4. *DRACO FORMOSUS*, BLGR.

Kuala Tembeling, 200 ft.

A slight nuchal fold may be present and the gular appendage is sometimes a little longer than the head.

[Originally discovered by Mr. Butler on the Larut Hills, Perak, and subsequently found by Mr. Annandale and myself on Bukit Besar in the Patani States, this species has since been found to occur practically everywhere in old jungle from sea-level to about 3,000 ft., being replaced above that height by the nearly allied *D. blanfordii*, which is never found below about 2,500 ft.—H. C. R.]

5. *APHANIOTIS FUSCA*, PETERS.

Kuala Teku, 500 ft.; Gunong Taban, 3,000 ft.

[Found sparingly almost everywhere in old jungle up to about 3,000 ft.—H. C. R.]

6. *GONYOCEPHALUS BORNEENSIS*, SCHLEG.

Kuala Teku, 500 ft.

[Not uncommon, but difficult to detect in the deep jungle in which it lives. Large adult specimens are very rare.—H. C. R.]

7. *GONYOCEPHALUS ROBINSONII*, *sp. nov.*

Snout rather pointed, a little longer than the diameter of the orbit; canthus rostralis, strong, raised; tympanum partly covered with scales, smaller than the eye-opening; upper head-scales small, keeled, unequal in size; an enlarged subconical tubercle behind the supraciliary edge and others on the occiput and temple; ten upper and eight lower labials; gular sac large, without serrated edge; gular scales very small, smooth; gular fold distinct only on the sides. Nuchal crest formed of large triangular lobes, in contact with each other at the base; the crest continuous with the dorsal, the lobes of which are much smaller and gradually decrease in size. Dorsal scales small, equal, obtusely keeled, the points directed upwards and backwards, very small on the flanks; ventral scales larger, sharply keeled. Limbs above with large, equal, keeled scales; fourth finger slightly longer than third; the adpressed hind limb reaches the anterior border of the eye. Tail compressed, with serrated upper edge at the base; upper caudal scales feebly keeled, lower larger and very strongly keeled.

Greyish-olive above, with four oblique, blackish bars on each side: eyelids black: a black bar from the eye to the ear: an oblique black bar in front of the shoulder: whitish beneath.

Total length	...	...	...	...	472	mm.
Head	...	...	...	...	40	„
Width of head	...	...	...	...	25	„
Body	...	...	...	...	112	„
Fore-limb	...	...	...	...	79	„
Hind-limb	...	...	...	...	127	„
Tail	...	...	...	...	320	„

A single male specimen from Gunong Tahan, 5,200 ft.

A very remarkable form, unlike anything previously described.

[This Lizard was found sitting on a low tree trunk in a narrow gully on the side of the final peak of Gunong Tahan and made no effort to escape when seized, though it bit viciously. As I have noted elsewhere (*Fascic. Malay. Zool. I. (1), p. 30 (1903)*), the adult members of species of this genus are curiously sluggish, and since the original note was made, I have been able to confirm the observation on all the known Peninsular species—viz., *G. grandis*, *herveyi* and *borneensis* and the present one.—H. C. R.]

8. CALOTES CRISTATELLUS, KÜHL.

Kuala Tembeling, 200 ft.

[Common in orchards and on the river banks, this species is rare in jungle country, but it is worthy of note that specimens, when so found, are much above the average size of the species.—H. C. R.]

9. CALOTES MICROLEPIS, BLGR.

Gunong Tahan, 6,500-7,200 ft.

Originally described from Tenasserim; has been rediscovered in Siam by Capt. Flower.

[Together with a small Black Shrew, a Warbler (*Suya waterstradti*), the Endemic Bullfinch (*Pyrrhula waterstradti*) and a Hill Tit (*Siva malayana*)—this was one of the highest ranging vertebrates on Gunong Tahan. The two specimens obtained were caught, in the one case basking on a rock and in the other among low vegetation, and were much less active than is usual with members of the genus.

The species has not hitherto been recorded from the Peninsula.—H. C. R.]

10. VARANUS NEBULOSUS, GRAY.

Kuala Tembeling, 200 ft.

[Common on the river banks, often growing to a very large size.—H. C. R.]

11. VARANUS SALVATOR, LAWR.

Kuala Teku, 500 ft.

[Shot, swimming in the river.—H. C. R.]

12. MABUIA MULTIFASCIATA, KÜHL.

Kuala Teku, 500 ft.

13. *MABUIA SIAMENSIS*, GTHR.

Kuala Lipis, 2,200 ft.

[It is interesting to find two such closely allied species occurring in practically the same locality, as I have no doubt whatever that *M. multifasciata* occurs also at Kuala Lipis, though specimens were not actually collected.

On the other hand, it is practically certain that *M. siamensis* is not found west of the main range, and it is, therefore, possible that on the east coast *M. multifasciata* owes its introduction to human agency, as is the case with *Gecko verticillatus* in Singapore and the Straits Settlements generally.—H. C. R.]

14. *LYGOSOMA PRÆSIGNE*, BLGR.

Gunong Tahan, 3,000 ft.

[Widely distributed at high elevations throughout the Peninsula.—H. C. R.]

15. *LYGOSOMA VITTIGERUM*, BLGR.

Kuala Teku, 500 ft.

Originally described from a single specimen from Sereinu, Mentawai Islands. The present specimen differs from the type in the præfrontals forming a median suture.

16. *LYGOSOMA COPHIAS*, *sp. nov.*

Section *Siaphos*. Body much elongate, limbs weak; the distance between the end of the snout and the fore-limb is contained twice in the distance between axilla and groin. Snout short, obtuse. Lower eyelid scaly. Nostril pierced in the nasal; no supranasal; fronto-nasal broader than long, forming a broad suture with rostral and a narrow one with the frontal, which is scarcely longer than the interparietals and in contact with the first and second supraoculars; four supraoculars, eight supraciliaries; frontoparietals and interparietal distinct and subequal in size; parietals in contact behind the interparietal; no nuchals; fourth and fifth upper labials below the eye. Ear hidden, indicated by a depression. Twenty-two scales round the middle of the body, smooth, a little larger than laterals. Præanals not enlarged. The length of the hind limb equals the distance between the eye and the fore limb. Toes short, fourth not longer than third, with 12 smooth lamellæ inferiorly. Brown above, mottled with darker, white beneath.

Total length	...	...	...	...	68	mm.
Head	...	...	...	...	7	"
Width of head	...	...	...	...	14	"
Body	...	...	...	...	29	"
Fore-limb	...	...	...	...	6	"
Hind-limb	...	...	...	...	9	"
Tail (<i>reproduced</i>)	...	...	...	...	32	"

A single specimen from Gunong Tahan, 3,000 ft.

This Lizard bears some resemblance to *L. relictum*, Vincig. from Engano, but is easily distinguished from it by the scaly lower eyelid, the paired frontoparietal, and the shorter toes, the fourth of which does not extend beyond the third. *L. surdum*, Blgr., from Selangor is very closely allied to *L. relictum*, but the limbs are a little longer, the frontal is longer and forms a broader suture with the frontonasal and the fourth and fifth upper labials are below the eye, instead of the fifth and sixth.

17. MACROPISTHODON RHODOMELAS, BOIE.

Kuala Teku, 500 ft.

[The following notes on the colour of this Snake were taken from life:

"General colour rich vermilion, the bases of the scales of the sides Prussian-blue: colours generally duller towards tail: a broad vertebral stripe dark maroon, the bases of the scales on each side white, giving the appearance of a narrow white edging. Sides of the neck French-grey, scales edged with white. Beneath whitish, a black spot on each side of the ventral shields."—H. C. R.]

18. LYCODON SUBCINCTUS, BOIE.

Kuala Teku, 500 ft.

[General colour lead, glossy black on the anterior half, bands whitish with a faint tinge of pink.

By no means a common Snake in the Malay Peninsula. It is, however, occasionally found in Kuala Lumpur itself, being probably brought in from the jungle with loads of firewood.—H. C. R.]

19. COLUBER TENIURUS, COPE.

Kuala Teku, 500 ft.

[This is the only instance I know of in the Malay Peninsula of this Snake being found more than a very few miles distant from the limestone caves in which it is exceedingly abundant.—H. C. R.]

20. COLUBER OXYCEPHALUS, BOIE.

Kuala Teku, 500 ft.

[Coloration in life: Sea green, each scale broadly edged with black, ventrals chrome yellow edged with black, neck and throat not so edged. Upper labials to nearly below centre of the eye chrome yellow as well as whole under surface of head. Upper surface of head bronzy green. A broad stripe from behind the eye to the articulation of the jaws black. Seven vermilion bands on tail, slightly narrower than the interspaces; obscure yellowish-bands on the body, becoming less marked towards the head, those on hinder part of body tinged with vermilion.—H. C. R.]

21. GONYOPHIS MARGARITATUS, PETERS.

Gunong Tahan, 3,000 ft.

22. DENDROPHIS PICTUS, GM.

Tahan River.

An anomalous specimen with the loreal fused with the praefrontals and fourth and fifth labials entering the eye on the left side.

23. PSAMMODYNASTES PULVERULENTUS, BOIE.

Gunong Tahan, 5,000-5,800 ft.

[This was the only Snake met with above the jungle zone on the mountain and was very common. All the natives, Malays and Dyaks alike, were very afraid of it, and insisted that it was most venomous and that its bite was far worse than that of the Pit-vipers (*Lachesis*), to some species of which it bears a faint resemblance.—H. C. R.]

24. DRYOPHIS PRASINUS, BOIE.

Kuala Teku, 500 ft.

25. BUNGARUS FLAVICEPS, REINH.

[At Kuala Teku a dead specimen of this Snake was observed, too decomposed to be preserved. It was 5 ft. 10 in. long, blackish-brown above, pinkish-red beneath, head and last ten inches of tail entirely pinkish-red.—H. C. R.]

EXPLANATION OF PLATES.

- Plate IV., Fig. 1. *Ixalus brevipes*, Blgr., *sp. nov.* (p. 63)
 Figs. 2, 2a. *Draco cyanolæmus*, Blgr., *sp. nov.* (p. 64)
 „ 3, 3a. *Lygosoma eophias*, Blgr., *sp. nov.* (p. 67)
 Plate V., *Gonyocephalus robinsonii*, Blgr., *sp. nov.* (p. 65)

IV.

THE GEOLOGY OF THE
TAHAN RANGE.

BY

J. B. SCRIVENOR,

GEOLOGIST, F.M.S.

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THE GEOLOGY OF THE TAHAN RANGE.

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GEOLOGIST, F.M.S

THE following Account of the Geology of the Tahan Range is based chiefly on notes collected during an ascent of Gunong Tahan in May, 1906, and subsequent journeys in Pahang :

The Tahan Range is remarkable in being composed almost entirely, as far as is known, of a series of estuarine rocks—comprising shale, sandstone, grit and conglomerate—which is provisionally named the Tembeling Series. The main range of the Peninsula, which, although greatly more extensive in length, rises very little higher than Gunong Tahan, is believed to be all granite and its modifications, but for occasional areas of schistose rocks, representing altered sediments.

Two ranges, similar to the Tahan Range, but on a smaller scale, are known in the Federated Malay States. One of these is a long range of low hills in the west of Pahang, parallel to the main range, and referred to elsewhere as the Bentong-Telôm Range ; the other is the small isolated Semanggol Range forming the border between Larut and Krian in Perak.

No direct evidence of the age of this series of estuarine rocks has yet been derived from the Tembeling District of Pahang ; but fossils discovered elsewhere point to a range in time dating from the Rhætic to the Inferior Colite. The collections made, however, are not numerous, either in specimens or species.

The breadth of the outcrop of the Tembeling Series in the typical district is about thirty-five miles. The strike is roughly N.N.W.-S.S.E., and there is reason to suppose that the series extends into Johore, reappearing as far south as Singapore. The Tahan Range lies on the western side of the outcrop. It would appear that the Tembeling River, whose general course in the upper reaches is to the west, has been turned south by this enormous barrier.

On either side this outcrop of the Tembeling Series is flanked by a wide outcrop of a series of calcareous rocks and associated igneous rocks, named provisionally the Raub Series and the Pahang Volcanic Series, respectively. One of the remarkable ranges of limestone hills belonging to the Raub Series was seen from the top of Gunong Tahan and visited later by the writer. It lies to the west of the range and is situated near Kampong Cherual in the Ulu of the Tanum, a left tributary of the Jelai. From a peak in this limestone range a magnificent view of the Tahan Range, about fifteen miles distant, was obtained ; and it appeared to the writer that it would be easier to ascend Gunong Tahan from this side than from the east.

Petrologically the conglomerate is remarkable for containing numerous pebbles of chert and carbonaceous shale with radiolaria and foramenifera. It is believed that these pebbles were derived from beds of similar chert and carbonaceous shale in the west of Pahang. The majority of the pebbles in the conglomerate are sandstone and quartz. The matrix is quartzose.

The sandstone afforded andalusite on separating the grains by means of heavy liquids, and also a few grains of zircon and other minerals.

In the Tahan River greenish schistose grits were found to contain a little tourmaline.

The shale is generally red, owing to surface weathering.

On the gravel banks of the Tahan River there are found pebbles of quartz-porphry and of a basic rock, which is of the same composition as dolerite. No outcrops of either rock in situ were found here; but elsewhere data have been collected which make it probable that this rock is younger, not only than the Tembeling Series, but also than the granite of the Federated Malay States.

In the Rivers Tekai, Tembeling and Tahan there is abundant evidence of the Tembeling Series having been thrown into a series of anticlines and synclines. In the part of the Tahan Range visited the predominant dip is about 45° W.S.W.

Malays can still be found who hint vaguely and mysteriously at mineral wealth in the Tahan Range. That small quantities of gold occur is extremely probable, and the presence of tourmaline makes it necessary to admit the possibility of tin ore being found also. To the prospector, however, the indications are most unattractive. The range would make an ideal health station.

J. B. SCRIVENOR,

29th January, 1907.

Geologist, F.M.S.

V.

A PERSONAL RECONNAISSANCE OF
GUNONG TAHAN.

BY

WALTER SKEAT, M.A.

V.

A PERSONAL RECONNAISSANCE OF GUNONG TAHAN.*

BY WALTER SKEAT, M.A.

ON the 6th August [1899] the expedition reached Kuala Aring. This is a small village in Ulu Kelantan about a week's journey up the Lebeh and about two days' journey from the Pahang-Kelantan frontier. Here we should have been within striking distance of the mountain and had to begin scouting, but, as it was obviously unnecessary for all the members of the expeditionary staff to go, I decided to push on alone. The Malays at Kuala Aring, however, stubbornly refused to give either active help or even information of any sort, when we asked about the route; the old Penghulu even going so far as to deny the very existence of Gunong Tahan, though I afterwards heard on the Tembeling River that Sakais had once piloted him from the source of the Aring to that of the Tahan in a single day.

This complicated matters; I knew that his assertion could not possibly be true, but, in view of his determined opposition, I felt that I could neither trust him nor any men that he might be induced to send with me and I came to the conclusion that, even if it took longer, it would be much safer and surer in the end to go by the at least partially known Tahan route. Having come to this decision and, as there was no time to be lost, I started the very next day.

The route from Kuala Aring to the Tembeling River in Pahang is, I believe, a fairly well-known one, but I may perhaps describe it shortly. After two nights on the banks of the Lebeh, we reached the junction of Sungei Durian with Sungei Limau. Here we discarded our boats and followed up the Limau for a short distance and then struck through the jungle reaching a point on its left bank some miles higher up it, where we camped for the night at the foot of a hill called Bukit Awin. Next day we crossed the watershed, ascending on the way, Bukit Awin, a spur of Bukit Batu Atap and several smaller hills. Early in the afternoon we reached the banks of the Pertang (the picturesque Pahang stream described by Mr. Clifford), made a raft and descended it as far as its junction with the Sat. Then, in turn, descending the latter we reached Kampong Kerayang long after nightfall. This was the first inhabited place that we came to on the banks of the Sat and, after spending the night there, we proceeded

* This account, which originally appeared in the "Malay Mail," is here reprinted by the permission of the proprietors.

down stream till we reached the Tembeling in a boat, which I hired from one of the elders of the village ('Toh Khatib Antar). Then descending the Tembeling we reached Pasir Pagi (the village of Penghulu Bakar) in the course of the afternoon. At Pasir Pagi I stayed four nights in the hopes of getting one of the Kelantan Sakais (*Orang Pangan*) then reported to be in the neighbourhood to accompany us, but my messenger unfortunately, though well acquainted with the tribe, only succeeded in frightening them away by his bungling and I merely lost the advances which I had forwarded. The Pahang Sakais, who are said to belong to a different tribe, are said to know little or nothing of the mountain, and this was, therefore, a great blow to my hopes of getting accurate local information, the sole purpose for which I required them. As guides the Sakais are, as a rule, extremely good, but I knew that, in this case at all events, I should have to depend upon my map and compass and to be my own guide, and hence I was not disappointed on this latter account.

The best of Malay guides may be as good in unknown jungle as a Sakai, but such men are rarely met with. On my way back across the watershed I had with me three Malays, all of whom had been that way before and were introduced to me by the Panghulu as safe guides, and yet on landing on the banks of the Sat, they immediately and hopelessly lost their way, and, as they were quite unable to find it, I was obliged to get out my compass and show it to them myself.

At Pasir Pagi, however, and at Pulau Dato, a little below the mouth of the Tahan, I was lucky enough to engage as carriers four of the pluckiest and strongest Malays that I have ever met. They were all Tembeling men and were great on the superiority of the Tembeling men to the good folk of Pekan (Kuala Pahang). What there may be in their contention I cannot say, but certainly these four men would have been hard to beat. They, with two of my own men from Kuala Aring and myself, made up a little party of seven, which, I am convinced, was quite large enough (as things turned out) to be really efficient. The Malays say that big expeditions to Gunong Tahan are bound to come to grief and common sense says that, with a small army of, say, sixty or seventy Malays in the Tahan jungles (on my return to Kuala Aring from the mountain, the Malays not only admitted knowing about it, but actually told me, as they had told the members of the expedition in my absence, that at least one, if not two, unsuccessful attempts had been made by Europeans to reach the mountain by that very route), proper supervision by one or two Europeans is impossible, while the chances of sickness and panic are immeasurably increased. Moreover, where so large a number of men are employed, all cannot be picked men and, as very few of them will be under the master's eye, they will certainly not do good work. With a dépôt somewhere near the foot of the mountain (the only way in which the mountain will probably be ascended in safety and comfort), this point would be of less importance, but I was only able to pay the mountain a flying

visit for reconnoitring purposes and could not afford the time which it would have taken to establish a *dépôt*.*

On the evening of the 18th, at about 5 p.m., we entered the black waters of the Tahan, invoking, as we passed, the Tutelary Spirit of the River mouth (Dato Kuala), and proceeded upstream as far as Pengkalen Dato—a small hamlet on the right bank of the stream—where we spent the night. Early on the second morning I hired two men from the hamlet as additional carriers to accompany us to the foot of the mountain (by which time the amount of rice we were carrying, some twenty-six gantongs †, would be considerably reduced). They both, however, turned out utterly useless and deserted us at daybreak after the very first day's work. This necessitated a general rearrangement of our packs, and the men being manifestly overloaded I took over the tent, which I thence forward carried up the mountain to the highest point which we reached. Still the men were very heavily burdened and, although their loads of rice got lighter from day to day, this must be allowed to account for our comparatively slow progress and frequent stoppages over the generally difficult or broken ground. In the first day we proceeded upstream by boat as far as Kuala Tenok—a tributary on the right bank entering the Tahan. Here we landed (on the opposite bank) and found several young lime trees growing, which were said to have been planted by a previous European expedition. They were from two to three feet high and were doing well, and we, in our turn, planted some durian and rambutan seeds.

A little further up the river we crossed to the left bank and commenced our long march overland. I had decided to go on foot partly because of the liability of the river at the time of year to sudden and dangerous floods (such as that in which poor Becher lost his life), and partly because I believed it would be quicker.‡ Subsequent events justified the decision, I think, on both grounds; for I was informed on our return that the river had been three times in flood during our absence on the mountain and had caused much anxiety as to our safety, whilst from the time that it took to negotiate the rapids on our return journey down stream, I am convinced that the upstream journey would have taken us several days longer at least than the overland route actually did.

* Our experience shows that Mr. Skeat was right in thinking that the ascent of Gunong Tahan would prove impracticable without a camp somewhere near the base of the mountain. Our camp at Kuala Teku, however, was more of the nature of a "flying base" as no stores were brought up, except those actually conveyed by the expedition itself. The only way to ascend the mountain in safety, if anything more than a very brief stay is intended, is to start with a large number of men and progressively shed them as the hill is approached.—H. C. R.

† Very short commons for the party for about eighteen days.—H. C. R.

‡ In this Mr. Skeat made a considerable error, to which was due the great hardships suffered by himself and his men. With reasonable care and in normal weather the Tahan can be ascended faster and a greater amount of baggage conveyed by boat than on foot.—H. C. R.

On the third day the river was one continuous succession of falls and rapids, so that we were glad enough to be travelling by land, although the forest was dense and choked with thorns, and the steep hill sides sloping sharply down to the river made the journey very difficult, especially for men so heavily laden as we were at this time.

On the fourth day the rapids being somewhat fewer and the reaches longer, we attempted to improve the pace by making a raft (for the heavier burdens only); but, when it was tried, progress was found to be slower still and we had to abandon the idea and take to the jungle again. I found during the afternoon that the going was much better on the skyline of the hills overlooking the Tahan, and so kept the men from going down to the rocky river side, which they were only too prone to do whenever I allowed it partly, I think, because they felt safer with the river actually in sight.

Following the skyline we came repeatedly upon peculiar open spaces several yards square and absolutely devoid of leaves and rubbish.* These places, according to the Malays, are the spots which the mountain 'bro (not the ordinary 'bro of the lowlands, but the full-sized cannibal 'bro of Gunong Tahan traditions †) clears for himself in order to feast on the grubs which he finds on the leaves. On our return I was repeatedly asked if we had been molested by these 'bro; certainly we had not been molested, but we did see many magnificent specimens of what was no doubt the ordinary 'bro, which replied menacingly to our coolies, and would have proved awkward customers if we had had to tackle them. Moreover, as we followed the trail we passed from time to time, broken branches or young saplings which had been broken short (the Malays assured me) by the brutes, of whose cannibal propensities they declared themselves to be mortally afraid.

The key to easy jungle travelling among many Malay hills, if not all, lies in knowing that the best track is almost always to be had by following the skyline. It may be that the denizens of the jungle (both wild beasts and Sakais) prefer to travel in comfort on the flat ground,

* Three such places I passed in the course of a few minutes. One measured ten yards by five as I stepped it.—W. S.

(With regard to the origin of these bare spots I am afraid that Mr. Skeat's Malays must have been imposing on his credulity. I have met with dozens in similar situations and they are nothing more than the playing-grounds of the Argus Pheasant.) The 'bro seen were most probably siamang.—H. C. R.

† The tradition of Gunong Tahan is that it contains the mother veins (ibu) of all the gold and silver in this part of the country, but that this *El Dorado* is defended from the cupidity of mortals by malignant demons, gigantic serpents, the cannibal apes, to which I have referred and all manner of wild beasts which have the power when shot at of transforming themselves. The very mosquitoes on this mountain were believed to be as big as fowls. However little evidence may be attached to the report of gold and silver, it is a matter of common knowledge on the east coast that a local chief on that side of the Peninsula is a possessor of a nugget or lump of gold of unusual size, which was dug out of the mountain by a Sakai.—W. S.

avoiding as far as possible the steep slopes which are so characteristic of these ranges. But, beside this, it is possible that the natural angle and formation of the ridge may itself in many cases favour the formation of rain channels along the skyline.

In the earlier part of the day we stopped to get some "tampor" fruit; one of the Pahang Malays, who was a very expert climber, running up the stem of the lofty tree which bore it, with extraordinary ease and agility, and lopping off the fruit-laden branches, which were then stripped as they lay on the ground. This man made himself of use, too, on several occasions by climbing trees for scouting purposes. On the present occasion he found out for us the exact direction in which the river was running, and thus enabled us to descend to its banks by the nearest way. On reaching the river we camped there, my unexpected arrival scaring away a rhinoceros which had been placidly browsing hard by. Both this night and the previous one, the tent contained some very unwelcome visitors in the shape of fire-ants whose bite was exceedingly painful. We had been eating rice without "lauk" (meat or vegetables) since we left the village near Kuala Tahan (Pengkalen Dato), but to-night we had some roasted seeds of the "bangkong," or wild "chempadak," and found them a very welcome addition.

That no game could be procured to eke out the failing supply of rice was due to the fact that our handful of cartridges had to be reserved for the purpose of self defence, as we had been told at Kuala Tahan that the lower ranges literally swarmed with big game, elephants, bears, rhinoceros and especially *sladang*, which, it is needless to say, we did not meet, though we had to provide against the possibility of doing so. One of the wonderful stories that was told us was that animals there bore a charmed life and one of the white men who had accompanied a previous expedition had shot at a bear on the banks of the Tahan and had wounded it mortally, but that instead of dying it had promptly turned itself into a siamang.

Though we had but one rifle, we were well armed with *krisses* and a spear or two, but it must not be forgotten that we were travelling in light marching order—the lightest possible—so much so that we left behind as superfluities at Pulau Dato on the Tembeling my ground mattress and one of the men's sleeping mats, which the Acting Resident very kindly returned to us on our subsequent arrival at Trengganu. A shot gun would have been an extra encumbrance and would almost certainly have become unserviceable, owing to the frequent drenchings that we experienced, besides which we saw remarkably few birds. What would have been of far greater assistance would have been a few dynamite cartridges, which would have secured us an abundance of fish in the upper reaches of the Tahan and its tributaries. I had tried more than once, unsuccessfully, to get some sent me from Singapore.

Next morning (the fifth day) we tried some of the young shoots or "cabbage" of a hard wood palm called "bayas."

Heavy rains had fallen during the previous day, and all our things were wet through, so that it took us more than three hours next morning to dry them and we did not get off till a little before nine. A towel, which I had been using to wrap round the rotan lashings of the tent which I was carrying, had been packed up by mistake and, as we were already late, I went without it, the sharp edges of the rotan cords, however, making it somewhat painful work. This day I determined to repeat the experiment of the day before and make for the top of the ridge, the result being that about noon we found ourselves on the top of a lofty crag, which, after the cutting of a couple of vistas through the low scrub on the top, gave us across a wide but flat and swampy-looking valley of perhaps some miles breadth, a magnificent view of the Tahan valley and lower ranges, the loftiest summits being wrapped in storm-clouds. This view gave us a good general idea of the relative position and direction of the hills here, and we then descended once more to the Tahan and, after about an hour's climbing along the underhang of its (here) precipitous banks, reached a level spot, where we camped for the night. The next day was perhaps one of the most trying that we experienced on the trip. Tremendous rain had made the rocks and steep hill sides so slippery that it was often very difficult to find a secure footing, while the jungle appeared more intertangled and impenetrable than ever. Progress being very slow, I kept the men at work till night when we had to camp on the only clear ground we could find at the bottom of a small land slide on the left bank of the Tahan, which had carried before it all the vegetation in its course from the mountain.

Next (the sixth) morning, after sending two of the men out for some preliminary scouting, we climbed up, following the course of the land slide and thence gaining the skyline, found a wild-beast track there, which turned out to be the best trail met with during the entire trip. We followed it up till late in the afternoon, climbing always at a good round pace and, as it was nowhere very steep, we must have covered fully eight miles before we stopped for the night. My object had been from the first not to climb Gunong Tahan, but, as far as possible, to locate it; and this object I now hoped to attain by ascending two or three crags (like the one we had ascended the previous day). The highest peak of Gunong Tahan, as shown in the latest map, appears rather as a continuation of the range on the western side of the Tahan valley, and I hoped to get a better view of it by climbing up to a commanding point on the eastern range. The density of the jungle, however, obscured the view and each successive peak of the ridge led us on, will-o'-the-wisp fashion, to another which was always just a little higher. Hence we continued to climb rapidly and at a little past two we met with our first specimen of the mountain fir (" rhu gunong "), which, I believe, does not occur at a height much under 3,000 ft. Still the ridge took us higher and higher and about 3.30 p.m. we camped for the night. Before we encamped, however, we had caught sight of the flank of a big mountain, which

shut off the view to the north-west and towered above us like a wall. And next (the seventh) morning we started in that direction, with the object of climbing it in order to see what was beyond. Climbing up by a circuitous track, which took us round the outside edge of a crater-shaped hollow on the mountain's flank, we reached this mountain much sooner than we expected, as we thought we should certainly have to cross an intervening valley. Rain fell frequently during the day and for the greater part of the time we were groping our way through blind baffling fogs, which would shift from time to time to show us a higher peak than the one we had reached. Still we had got our proper bearings and by dogged perseverance by the end of the day we had reached the skyline of the main eastern range of what, according to information subsequently obtained (to which I shall refer afterwards), must, I think, have been Gunong Tahan. This range* running, generally speaking, in a N.N.-W. direction climbs steeply up crag by crag till it unites, almost at right angles with what I may call the Great Barrier Mountain, whose central peak was the highest visible from every point of view, both on this and all succeeding days. On the opposite side of the valley, its green sides seared and scarred with precipices, rose another great range (the western range), stretching approximately in the same direction as that whereon we stood, and climbing similarly, peak by peak skywards until it terminated, in a lofty summit exactly opposite Gunong Tahan.† This western mountain, beyond which the western range descends again plainwards and whose highest peak must be little short of Gunong Tahan in height, should, according to information subsequently given me, be Gunong Larong or "Coffin" mountain, a fitting name for the compeer of Gunong Tahan. These two great peaks—Gunong Tahan and Gunong Larong—appear from this point as if they completely blocked the head of the valley (as the Malays say that they do).‡

The ridge we had reached, and on which we were camped for the night, was a narrow deeply-gapped, saw-like edge, in some places not more than a few feet wide, sloping precipitously to the bottom of the valley on our right. Most of its peaks, save for a few firs and tamerisks, were bare on the top and in many places we came upon outcrops of rock.§

The next morning, being at first clear, we had an unrivalled panorama of the great hill-systems that here furrow the country as

* This range must be the one I have marked in my map as running from "Skeat's Camp" through "Observation Hill" to the foot of the cliffs on Gunong Siam, which is here called the "Great Barrier Mountain."—H. C. R.

† Apparently the mountain to which, on my map, I have ascribed the name Gunong Ulu Kechau from information supplied by natives.—H. C. R.

‡ This is not quite correct. The two ranges converge, but at the head of the valley stands the highest peak of all, the true Gunong Tahan (marked "C" on Mr. Skeat's map), separated from both the lateral ranges by deep valleys.—H. C. R.

§ The vegetation, though undoubtedly scanty, is thicker than this passage indicates.

far as the eye can see. Some of the more distant ranges must have been nearly a hundred miles away and yet their outlines were clear and sharp. About twenty miles to the eastward was a stretch of comparatively flat country, in the midst of which stood out distinctly a big limestone hill,* with a smaller one to the left of it; the limestone glittering in the sun with splendid effect. From many thousands of feet below came the sound of falling waters, ahead of us almost within shouting distance, lay the untrodden heights of the Barrier Mountain, the object of our search, whilst at the head of the valley on our left the Tahan, or one of its tributary streams, flashed white on the mountain side as it fell headlong down to the rocky valley, many hundreds of feet below.† We spent a wet, cold and comfortless night here, and, my trousers being badly burnt in an attempt to dry them, I had henceforward to go in rags.

The general direction, or "run," of these ranges is not unlike that of the Tahan ranges, as shown on the new map, with the single exception of the omission of the eastern peak, opposite the one described on the map as Gunong Tahan. With the insertion of this second peak, the new map might be taken to give a fairly accurate idea of this part. If anything at all is certain of the range, it is that there are two of these peaks in the positions I have described. It is also absolutely certain that the Tahan River has at least one big tributary, near its head waters, the tributary by following which we drifted back into the Tahan on our way back—a tributary, however, which was of almost equal size with the Tahan itself.‡ There are besides one or two other very big tributaries some days' journey up the stream, above S. Tenok. I may perhaps add that the Tahan valley is quite unmistakable, when it is viewed from our camp site on the eastern range. There is no rumour of any other valley in the immediate neighbourhood that can be confidently declared to be thousands of feet deep and that culminates in two such peaks as those I have described.§

We now started up the range through torrents of rain and fog and continued climbing until we reached a peak some hundreds of feet higher than our camp site of the night before.|| This peak was also bare and covered with tamerisks. Beyond it the range broke off in an abrupt and precipitous cliff and we found after several attempts to descend by climbing down from tree to tree that it was impossible

* Also noted by us and by Waterstradt from a mountain much further to the north-east, which he considered to be Gunong Tahan.

† Marked on my map as on one of the lateral streams.—H. C. R.

‡ The Teku River.

§ As a matter of fact, the whole of this valley is that of the Teku and not the Tahan, which takes a wide sweep to the north-east and rises on the opposite face of the "Barrier Mountain."

|| "Observation Hill," about $\frac{3}{4}$ of a mile further on.

to reach the Barrier Mountain by this route.* Our store of rice was now sufficient for a few days only and there seemed no alternative but to return. Before we did so, however, we extemporised a flag by fastening an old sarong to the top branches of one of the tamerisk trees and then climbed laboriously down to our camp of the night before, which we reached in two or three hours.† Perhaps, on the whole, the best way to give an idea of the formation of this part of the range would be to describe it as exhibiting a "gigantic trough-fault," the eastern ridge lying between the flagged peak and the Barrier Mountain (Gunong Tahan), having dropped solidly down for a considerable depth, leaving ragged and precipitous (and in many places overhanging) cliffs at each of the ends from which it had broken away. The cliffs at the mountain end are mostly overhanging and hence there underlies it a considerable amount of detritus (or "screes"), which at several points rise to within a few feet of the summit of the cliffs, but never reach so high as to make them accessible.‡ At the nearer end, under the flagged peak, the cliffs were, as I have said, so steep that I determined to descend and make an attempt to circumvent them at their base rather than take the risk of adhering to the summit route. This was particularly disappointing, because just at the top of the cliff above us we could see the central peak of the Barrier Mountain, which, as I have already said, appeared to be the highest peak from every point of view and which, if the highest, must have been the summit of Gunong Tahan itself.§ Moreover, the highest point of the screes which we reached must, I should say, have been within 300 ft. of the summit of this peak. It was nightfall when we got back and once more we spent a terrible and sleepless night, a terrific storm with appalling crashes of thunder and flashes of lightning raging about the solitary peak on which we had taken shelter. The ground was uneven and nothing would keep the rain from flooding the tent, whilst the bitter cold crept into our bones and was enhanced by the sodden state of our clothes. Next morning we started down hill following our old trail and having descended as far as the crater-shaped hollow, of which I spoke before, broke off from our old trail and turned to the north. Again starting up hill by dint of incredible labour we reached the sunken part of the ridge (the "trough") before dark.

This flank move having proved so far successful, I was in great hopes that we might reach the top of the Barrier Mountain itself by the end of next day, but the length of the sunken ridge, or "trough,"

* This route was the one followed by us; it is quite practicable with the aid of ladders or notched poles in the worst places.

† Remains of this flag were found by our party.

‡ Mr. Skeat was unfortunate in his search; there are at least half a dozen places within half a mile of where the "sunken ridge hits the Barrier Mountain," where ascent is possible, though a steady head and light loads are necessary.

§ The true top is at least two miles in a bee line from this summit separated by very broken ground and a valley over 1,000 ft. deep.

proved much greater than I had supposed, and the next day saw us only at the foot of the cliff, which I have described.

This day's work proved a mere repetition of previous experiences. A long and disheartening struggle with torrents of rain and a dense smothering fog. The compass guided us safely, however, before nightfall, over the last part of the sunken ridge and on to the shoulder of the Barrier Mountain itself. During the day we had had to climb several lofty peaks, including two very sharply pointed "aiguilles," covered with low scrub that was only knee-deep. The summit of one of the aiguilles was only about two yards square and it looked so dizzy a spot that only one of the men would follow me to the top. Such small standing room at such a height was certainly, however, enough to make anyone giddy and I could not blame the others. A deep saddle between two of these peaks was covered with low underwood which was absolutely choked with some species of dwarf rotan. This took plenty of hard cutting to penetrate and tore the men's clothes, already fairly ragged and rotten with the treatment they had received, to ribbons!

At the end of the day the rain set in heavily and continued for hours. We camped, *faute de mieux*, on a projecting angle of the Barrier Mountain and we had just pitched our tent—a trying ordeal in the fast falling rain—when I heard the roar of a landslide on the opposite side of the valley and spent an anxious and sleepless night in consequence.* We had no supper that night, dry firewood being unobtainable, the cold was greater than ever, and in spite of the tent and shelter we were all drenched to the skin. Next morning we, at first, attempted to circumvent the cliff above our camp by bearing to the north-west;† but the further we went the more difficult became the ground, and coming to a precipice we then climbed up the cliff by way of the screes for a good many feet, but as we climbed the cliff climbed, too, and, though we got within some fifteen or twenty feet or so of the top, we could never get any nearer.

The "screes," as I have already said, lay at a very steep angle, so steep in fact that in many places it was barely climbable, and at one especially difficult spot, where the granite‡ was slippery with rain, and there was only moss to hold by, the ascent became very precarious and in struggling up at this point one of the men lost his chopper (parang), a second lost his parang-handle and I lost a gold ring, which slipped from my finger as I was hanging over the abyss. Then the rain clouds shut down upon us steadily, and after climbing up to the furthest point we could reach and finding it impossible to proceed, we went down the mountain side to the eastward and camped that night, in the rain, on the banks of a big mountain torrent. We had

* Traces of landslips are visible all along the cliffs of the western range.—H. C. R.

† The only practicable route and the one followed by us.—H. C. R.

‡ Not granite; quartzite.

now only three days' rations, but the next morning I made a last attempt to circumvent the cliffs which had baffled us so long. The men at first refused to go, saying that they had had enough of climbing, that we were already short of rice, etc. I offered them double pay, however, in the event of success, and finally two of them agreed to accompany me, the rest remaining in camp until our return. This attempt, too, failed, as the mountain side proved to be covered with giant boulders (under one of which we saw some dung of the Malay mountain goat) and low cliffs, many of them not more than eight or ten feet in height, but rising in many tiers one above the other. These low cliffs and boulders, which would have offered no serious difficulty under ordinary circumstances, but to proceed, it was clear, would take us more time than we could afford, considering our scanty allowance of rice. I therefore felt compelled to give orders to descend and evening saw us encamped a considerable distance down the stream. That night, however, a great calamity befell us; our matches gave out. We had brought with us as many as thirty match-boxes, but in a flood which overtook our camp at Kuala Badong, on our way up the Lebeh almost every one of the boxes had been spoilt. The dampness of the jungle and the persistent rains rendered futile all attempts to obtain fire by the ordinary jungle methods (of friction) and, though we used to spend hours every night over such attempts, we were never able to do more than get smoke by it, although two, if not four, at least of our men were well versed in the methods ordinarily employed. From this night forward, therefore, we could neither cook the little rice that remained, nor dry our clothes, and our return journey, before we reached civilisation again, would be a mere record of privations and hardships, not very interesting to read. I will, therefore, merely say that on the next day we followed the stream (which at the time we hoped might be the Aring or some tributary of the Lebeh) till we reached a disused trail leading to the site of a ruined and deserted shelter on the river bank, whether Malay or Sakai it was hard to tell. Forging the river close to this shelter, we climbed a steep hill and had already descended rapidly again by a steep but otherwise easy trail for over two hours, when one of the Selangor Malays was bitten by a snake. Fortunately it was a small snake, but the foot began to swell and I cauterized it by way of precaution and shortly after ordered a halt for the night. The men's feet (which had been suffering, they said, from the poisonous water under foot in the jungle) were now better, but my own feet had meanwhile become so painful and inflamed (I believe from the same cause) that I found it impossible to keep my boots on and was obliged to discard them and wrap up my feet in cloth, though even so walking was exceedingly painful work. The skin had turned a bright crimson and my feet felt as if they had been plunged in boiling water. To add to our troubles that day two of the Malays on their way down to the camp met with a tiger, and we, therefore, had to take special measures of precaution in the camp at night.

Next day we started better, and having reached a broad and quietly flowing stream (which was flowing down to meet the stream we had been hitherto following) decided to stop and build rafts. Bamboo was scarce and the building of the rafts took the rest of the day, and so we camped upon the bank for the night, having everything in readiness for an early start next morning. That evening the other Selangor Malay had an alarming attack of high fever with cardiac pains. I managed to reduce the temperature with phenacetene, but for the cardiac pains I had nothing but opium pills, which, however, appeared to afford him a good deal of relief and next morning he was able to take his place on the raft. We had not, however, gone down many bends of the river, when we came to a close succession of rapids, down which no raft could possibly have lived, we had, therefore, to abandon the rafts and proceed overland until the rapids were passed. About noon we came to a spot where another big stream united with the one we were on and swelled it to twice its size and we once more set to work to build rafts, bamboo being fortunately plentiful.* We camped there that night and started early next morning. In the course of the day we discovered that we had been following a tributary of the Tahan, which had brought us back again into the main stream. This was a serious matter to us, now that we could get no fire. We had to live on the wild fruits of the jungle (Tempoi, Taban, etc.), eking that out with a handful or two of uncooked rice steeped in a little water.† Re-entering the Tahan meant that we had to go down as awful a succession of rapids and falls as any river in the Peninsula can show.‡ There was no alternative, however, and so by dint of carrying the baggage round some twenty or thirty falls and with tremendous labour we got our rafts safely down the Tahan in the course of the next two days till we reached once more the Datoh's house near Kuala Tahan at which we had stopped on our way up.

We returned to Kuala Aring by the same route by which we had started, Dolah, the Selangor Malay, who had the attack of malaria, being so prostrated that he had to be carried across the watershed from Sungei Sat to Sungei Durian. There my own feet swelled up again.

* Mr. Skeat had come down the main stream of the Tahan and the river he mentions is the Teku, where our camp was situated.—H. C. R.

† I had besides a few protene biscuits and about a dozen small squares of Gye's compressed food. When the rice began to fall short, I attempted to live on the former alone, but grew so weak on this diet that on one occasion I reeled and fell, cutting my fingers with a spear which I was carrying. The pressed food was better, but, owing to the lack of matches, I had to eat it raw and even then it soon gave out.—W. S.

‡ As mountain streams go the Tahan River is not really very bad, except in floods. The rapids are very numerous, but only one is dangerous. I descended myself in a dug-out with two Malays from Kuala Teku to Kuala Tenok in one day, and that too when the river was low, and the shingle reaches troublesome in consequence.—H. C. R.

The Malays in the Kuala Tahan neighbourhood (some of whom had been employed on Becher's expedition) asserted on our return that at the head of the Tahan valley are two main peaks of almost identical height, one of which (the eastern one and the most precipitous) is Gunong Tahan, and the other (the western, which is slightly lower) Gunong Larong or Coffin Mountain. They also declared that these two mountains entirely block up the upper valley of the Tahan valley, their whole description answering closely with what we found. I give these statements of the Malays, however, for what they are worth, merely remarking that, if they are at all accurate, we must, I think, have been very close to the top of Gunong Tahan, and that, if they are not, I hope, some more fortunate climber than myself will before long be in a position to correct them.*

THE SEA.—It was too hazy in the extreme distance to be quite sure whether we saw the sea, though there can be no doubt that the sea is visible from this range.†

FAUNA.—We came upon a solitary elephant track that continued for some distance up the range, but it then turned off and probably re-descended to the valley below; besides this, there were rhinoceros tracks, and tracks of the wild goat, but we did not meet any tracks of sladang or bear. The tiger that we met was on the lower slopes of the range, but he did not trouble us after that one night. There were a fair number of "brok" and siamang on the lower slopes, but we only saw two snakes, one a green snake that we saw asleep on a low shrub below our camp on the top of the ridge, and the other the snake (which I did not see), which bit Mat Akib. With the exception of the argus pheasant which I saw on the lower part of the range close to the stop where we met the first fir tree, there were hardly any birds, and few traces of small mammals. On our way down the upper reaches of the Tahan, by raft, we did, however, see a large monitor and a large snake swimming across the stream, much to the disgust of the Malays, who immediately spat into the river and exclaimed, "May you die before I do," in each case, as such meetings are considered extremely unlucky.

* This description, on the whole, is fairly correct. The western peak, Mr. Skeat's "Barrier Mountain," is the one generally known as Gunong Tahan by Pahang Malays. The western range, forming the watershed between the Tahan and Kechau River systems, would appear to be the Gunong Larong mentioned, while the mountain closing the valley at its head between the two ranges which is the highest summit is that called Gunong Siam by the Kelantan Malays. This summit would not have been visible from any point attained by Mr. Skeat, being hidden by his "Barrier Mountain." From the bottom of the cliff to the top of this summit is about four hours' walk, once the right route is found and the top is distant about two miles as the crow flies from the highest point of the range.—H. C. R.

† Though I was favoured with exceptionally clear weather on the four or five occasions I was on the top, I was unable to pick up the sea with any certainty and much doubt if it is really visible.—H. C. R.

VEGETATION.—As soon as we reached the higher slopes the bamboos grew rapidly scarcer until they were only to be found in sheltered hollows and eventually ceased altogether. Rattans continued to trouble us considerably longer, but on the highest part of the range, as we began to approach the “Barrier Mountain,” they, too, ceased to appear, except in the deep saddles between lofty peaks. The trees here and for at least a day and a half’s journey further down were covered with a thick layer of moss which was always saturated with moisture and in some places the ground was covered with an equally thick mossy carpet.

The trees, too, on almost every peak and on the ridge, were grown upon by what the Malays called “Rambut hantu” (*lit.* Devil’s hair) as well as by an extraordinary number of lichens, orchids and “monkey cups” (Priok kra)*; the latter varying greatly in colour and size, the cups of the smallest variety, measuring less than a quarter of an inch across. Besides these, upon the higher peaks, there were the firs† and tamerisks, a quantity of what the Malays called “resam”‡ great whorl-like leaves growing upon stems often six or eight feet long, and none too easy to force one’s way through and low bushes of the arbutus type.

* Pitcher plants (*Nepenthes*, spp.), very abundant at similar elevations throughout the Peninsula.—H. C. R.

† *Dacrydium* and *Dammara*, spp.—H. C. R.

‡ Large ferns, *Dipteris horsfieldii* and *Gleichenia pectinata*.—H. C. R.

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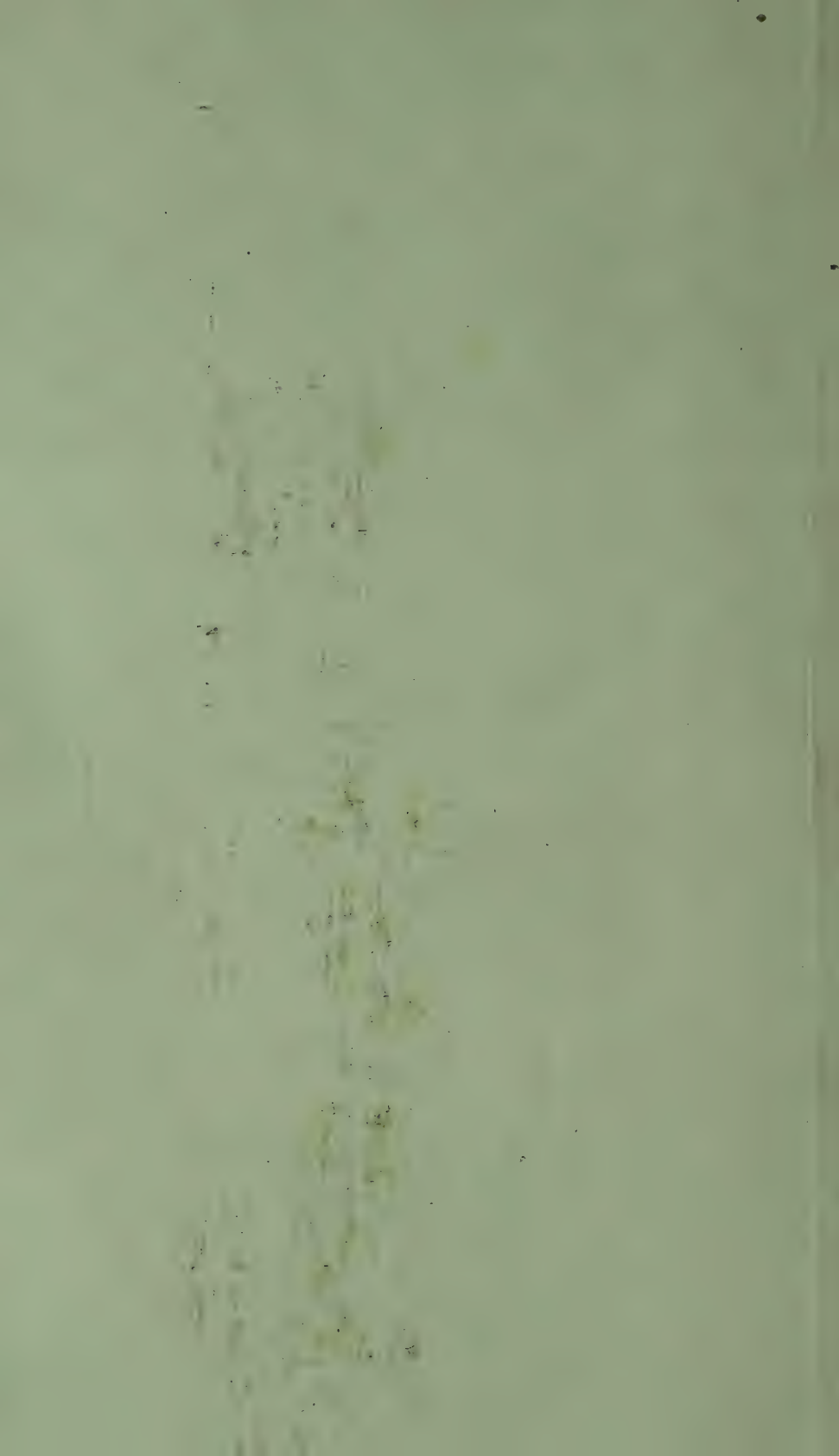
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